DR-605T/E/TE1/TE2

Service Manual

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SPECIFICATIONS

1) General

Frequency Rage:			
	(Version T)	VHF BAND	136.000 ~ 173.995MHz (RX)
			144.000 ~ 147.995MHz (TX)
		UHF BAND	420.000 ~ 470.000MHz (RX)
			430.000 ~ 449.995MHz (TX)
	(Version E)	VHF BAND	144.000 ~ 145.995MHz (RX/TX)
		UHF BAND	430.000 ~ 439.995MHz (RX/TX)
	(Version TE1)	VHF BAND	136.000 ~ 173.995MHz (RX/TX)
		UHF BAND	400.000 ~ 420.000MHz (RX/TX)
	(Version TE2)	VHF BAND	136.000 ~ 173.995MHz (RX/TX)
		UHF BAND	450.000 ~ 470.000MHz (RX/TX)
Modulation:		F3E (FM)	
Antenna Impedance:		50Ω	
Supply Voltage:		13.8 Volts DC	
Ground:		Negative	
Current Consumption		VHF TX	50W: 11.5A max. (T/E), 35W: 11.0A max. (TE1/TE2)
		UHF TX	35W: 10.0A max.
		RX	1.2A max.
Frequency Stability:		±10ppm max.	
Dimensions (Body only):		140(W)mm x 40(H)mm x 176(D)mm	
Weight:		1.1kg	
Cannel		VHF: 51 / UHF: 51 total 102	

2) Transmitter

Output Power:	VHF BAND	High: 50W / Low: approx. 5W (T/E)
		High: 35W / Low: approx. 5W (TE1/TE2)
	UHF BAND	High: 35W / Low: approx. 5W
Modulator:	Reactance modulation	
Spurious Emission:	-60dB max.	
Max. Deviation:	±5kHz	
Mod. Distortion (@60% mod.):	3% max. (300 to 3000Hz)	
Microphone Impedance:	2kΩ	

3) Receiver

Rx System:	Double Superheterodyne	
Intermediate Frequency:	VHF:	First: 21.7MHz / Second: 450kHz
	UHF:	First: 30.85MHz / Second: 455kHz
Sensitivity (12dB SINAD):	Main band: -16dBμ (0.16μV) or less	
Selectivity:	-6dB: 12kHz min., -60dB: 28kHz max.	
Squelch Sensitivity:	-20dBμ (0.1μV) or less	
AF Output (@5% distortion):	2W or more (8Ω load)	
Speaker Output Impedance:	8Ω	

Note: Specifications are subject to change without notice or obligation.
Specifications guaranteed in the amateur band only. (T/E)

CIRCUIT DESCRIPTION

1) Frequency Configuration

• VHF and UHF bands have each PLL independently, and 2 IF systems are provided. Therefore 2 bands can be received simultaneously.
• The received signal of VHF band is mixed with the first local oscillator signal and converted into the first IF of 21.70MHz. Then the resulting signal is mixed with the second local oscillator signal of 21.25MHz and converted into 450kHz.
• The received signal of UHF band is mixed with the first local oscillator signal and converted into the first IF of 30.85kMHz. Then the resulting signal is mixed with the second local oscillator signal of 30.395MHz and converted into 455kHz.

2) Receiver System

1. Receiver Circuit

The received signal from the antenna is passed through the duplexer (the circuit consists of low-pass filter for VHF and high-pass filter for UHF), and divided into the signals of VHF and UHF.

1-1 144M Band Receiver Circuit

After the received signal from the duplexer is passed through the band-pass filter via the antenna switch (D5, D6), the signal is amplified at RF amplifier Q11. The unwanted signal of the amplified signal is eliminated by the band-pass filter consisting of 3 varicaps. Next the signal is mixed with the first local oscillator signal at the first mixer Q12, and converted to the first IF. The unwanted signal is attenuated by the crystal filter circuit. Then the signal is fed to IC2 Pin16 after being amplified at IF amplifier Q7. In this IC2 the signal is mixed with the second oscillator signal and converted to the second IF, then it is output from Pin3. The output signal is attenuated the unwanted signal by the ceramic filter, and input again from IC2 Pin5. Next the signal is passed through the limiter amplifier and demodulated in the quadrature detection circuit of IC2 to be output from Pin9 as AF signal.

1-2 430M Band Receiver Circuit

The received signal from the duplexer is passed through the antenna switch (D206, D207), and amplified in the RF amplifier Q211. The amplified signal is attenuated the unwanted signal by the helical filter L218. The signal is amplified in RF amplifier Q212 and attenuated the unwanted signal again by the helical filter L219, then it is mixed with the first local oscillator signal at the first mixer Q213 and converted to the first IF. The unwanted signal is attenuated by the crystal filter circuit. Then the signal is fed to IC202 Pin16 after being amplified at IF amplifier Q214. In this IC202 the signal is mixed with the second oscillator signal and converted to the second IF, then it is output from Pin3. The output signal is attenuated the unwanted signal by the ceramic filter, and input again from IC202 Pin5. Next the signal is passed through the limiter amplifier and demodulated in the quadrature detection circuit of IC202 to be output from Pin9 as AF signal.

2. S (Signal) Meter Circuit

VHF:

The S meter signal DC voltage which is output from IC2 Pin13 is supplied to IC401 Pin10 via Trim. pot VR1, then it is digitized by A/D converter to be indicated on LCD as the S meter.

UHF:

The S meter signal DC voltage which is output from IC202 Pin13 is supplied to IC401 Pin5 via Trim. pot VR202 then it is digitized by A/D converter to be indicated on LCD as the S meter.

3. Squelch Circuit

VHF Squelch Circuit:

The AF signal which is output from IC2 Pin9 is input to Pin10. Only the noise is amplified by the active filter in IC2 and output from Pin11, then amplified by the noise amplifier Q6. The amplified noise is rectified to DC voltage by D2 and input to CPU IC401 Pin9 via Trim. pot VR2. In the IC the input voltage and the settled voltage by the squelch knob are compared to work the squelch ON/OFF. When the squelch is open, the squelch signal "H" is output from IC401 Pin41 and LED D401 (green) lights.

UHF Squelch Circuit:

The AF signal output from IC202 Pin9 is input to Pin10. Only the noise is amplified by the active filter in IC2 and output from Pin11, then amplified by the noise amplifier Q206. The amplified noise is rectified to DC voltage by D202 and input to CPU IC401 Pin5 via Trim. pot VR201. In the IC the input voltage and the settled voltage by the squelch knob are compared to work the squelch ON/OFF. When the squelch is open, the squelch signal "H" is output from IC401 Pin13 and LED D402 (green) lights.

3) Power Supply Circuit

1. VHF Power Supply Switch Circuit and Unlock Circuit

In the receiving mode, "H" is output from PLL shift register IC501 Pin16 according to the serial data from CPU, and Q17 and Q16 are turned ON, then 8V is added to 8RV line. In the transmitting mode, just same as the receiving mode, "H" is output from IC501 Pin17, and Q19 and Q18 are turned ON, then 8V is added to 8TV line. When PLL is unlocked, the unlock switch Q21 is turned ON because "H" is output from UL terminal of PLL-VCO unit. Then 8TV switch Q19 is turned OFF. Consequently, as 8TV line does not work, the unit does not transmit when PLL is unlocked.

2. UHF Power Supply Switch Circuit and Unlock Circuit

In the receiving mode, "H" is output from PLL shift register IC601 Pin16 according to the serial data from CPU, and Q217 and Q218 are turned ON, then 8V is added to 8RV line. In the transmitting mode, just same as the receiving mode, "H" is output from IC601 Pin17, and Q220 and Q219 are turned ON, then 8V is added to 8TV line. When PLL is unlocked, the unlock switch Q222 is turned ON because "H" is output from UL terminal of PLL-VCO unit. Then 8TV switch Q220 is turned

OFF. Consequently, as 8TV line does not work, the unit does not transmit when PLL is unlocked.

4) AF Signal Circuit

1. VHF AF Signal

The AF signal which is output from IF unit IC2 Pin9 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R19, C18, R13, C10, R12 and C9), then amplified by AF preamplifier Q3. Besides the amplified signal is made the AF frequency characteristics 300Hz or more by the de-emphasis circuit (consisting of C5, R8, C4, R3, C3). The de-emphasized AF signal ROV is muted and after the signal is adjusted by volume VR401, added to AF power amplifier IC3 Pin1 and amplified to drive the speaker.

2. UHF AF Signal

The AF signal which is output from IF unit IC202 Pin9 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R226, C213, R222, C211, R221 and C210), then amplified by AF preamplifier Q203. Besides the amplified signal is made the AF frequency characteristics 300Hz or more by the de-emphasis circuit (consisting of C207, R210, C206, R207, C205). The de-emphasized AF signal ROU is muted and after the signal is adjusted by volume VR402, added to AF power amplifier IC3 Pin1 and amplified to drive the speaker.

3. AF Mute Circuit

VHF:

When the squelch is turned ON and there is no input signal, the output control signal of the microcomputer IC401 Pin42 turns ON double mute switches Q2 and Q4, then the input signal of audio power amplifier IC3 is cut to mute the speaker output.

UHF:

When the squelch is turned ON and there is no input signal, the output control signal of the microcomputer IC401 Pin19 turns ON double mute switches Q204 and Q233, then the input signal of audio power amplifier IC3 is cut to mute the speaker output.

5) Transmitter System

1. Modulator Circuit VHF/UHF

After the voice is converted into the electric signal by the microphone, the signal is led to the microphone amplifier Q401 to be amplified. The microphone amplifier includes the pre-emphasis circuit. The amplified voice signal is added to the IDC circuit of operational amplifier IC203 and limited the band width. Each frequency deviation can be adjusted in VR3 (VHF) or VR204 (UHF). The signal is added to varicap of VHF/UHF VCO unit for reactance modulation.

2. Drive/PA Amplifier Circuit

VHF:

The transmit signal from VCO of VHF band is amplified by the younger amplifiers Q9, Q10, then input to the power module IC1. The signal amplified to the desired level in IC1, is passed through the low-pass filter, antenna switch, and low-pass filter in duplexer to attenuate the second and third harmonics enough, then supplied to the antenna.

UHF:

The transmit signal from VCO of VHF band is amplified by the younger amplifiers Q208, Q209, Q210 then input to the power module IC201. The signal amplified to the desired level in IC201, is passed through the low-pass filter, antenna switch, and low-pass filter in duplexer to attenuate the second and third harmonics enough, then supplied to the antenna.

3. APC circuit

VHF:

A part of output power from low-pass filter is detected by Diodes D7 and D8, and converted to DC. The detection voltage is passed through the APC circuit of UHF side (Q229, Q228, Q227), then it controls the APC voltage supplied to the younger amplifier Q10 and the power module IC1 to fix the output power.

UHF:

A part of output power from low-pass filter is detected by Diodes D208 and D209, and converted to DC. The detection voltage is passed through the APC circuit of UHF side (Q229, Q228, Q227), then it controls the APC voltage supplied to the younger amplifier Q210 and the power module IC201 to fix the output power.

6) PLL Circuit

1. PLL Synthesizer Circuit

VHF and UHF bands have their own units isolatedly. The sub unit is packed in a hard shield case so as not to be influenced by the circumstances. The crystal X2: 21.25MHz is oscillated in IC501 (VHF), and the output is fed to IC601 (UHF) via buffer Q13. The reference oscillating frequency (X2) is divided inside IC501 and IC601 to gain the reference frequency of 5kHz or 6.25kHz. The comparison frequency is divided by the pulse swallow system PLL IC501 and IC601 after VCO output is amplified in Q505 (VHF) and Q604 (UHF). In the result, the PLL synthesizer which has 5, 10, 12.5, 15, 20, 25, 30 and 50kHz steps is obtained.

The reference frequency of 21.25MHz is passed through the buffer of IC501 and output from Pin1 XBO, then input to IC2 Pin1 as VHF (144MHz band) 2nd local oscillator.

*As for TE1 and TE2, reference frequency of 21.25MHz is oscillated in X901: TCXO unit and fed to IC501(VHF).

2. V-VCO Circuit

The desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q502. VCO control voltage is added to the varicaps D502 and D503 to tune the oscillating frequency. While receiving RXV becomes "H", and Q501 and D501 are turned ON to shift the oscillating frequency.

3. U-VCO Circuit

The desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q601. VCO control voltage is added to the varicaps D602 and D603 to tune the oscillating frequency.

7) Front CPU and Peripheral Circuit

1. Microphone Key Input Circuit

PTT key:

Soon after the switch on the microphone (PTT) is turned ON, "L" level is input to CPU IC401 directly.

UP/DOWN key:

Soon after this switch is turned ON, the voltage is generated by the resistors that are connected to keys and supplied to IC401 Pin4 then A/D converted in CPU.

2. Lighting Circuit

When the power is turned ON, the voltage which is stabilized to 10.5V at Q405 and D407 is supplied to LMP401 and LMP402 to turn ON the lamp.

3. Reset and Backup Circuit

When the power is turned ON, "L" level of approximately 2μs or more is output from IC403 OUT (equipped with reset function), then "H" level is output to reset CPU IC401. When the power is turned OFF, IC405 output (BU) becomes "L" level and the transceiver goes into the backup mode. The contents of the memory is written on E2PROM IC402 in the backup mode. Then IC403 (equipped with reset function) becomes "L" level to reset the CPU.

4. Beep Sound Output Circuit

The square pulse is output from CPU IC401 Pin23 (BEEP), then it is integrated by CR and input to AF amplifier without passing through Volume VR.

8) Cross Band Repeater Circuit (T, TE1, TE2)

When the Squelch of VHF side is opened in the Cross Band Repeater mode, the AF signal ROV (VHF) is unmuted and amplified by IC203. The amplified modulation signal is added to modulation varicap of UHF VCO and transmitted from UHF side. When the Squelch of UHF side is opened in the Cross Band Repeater mode, the AF signal ROU (UHF) is unmuted and amplified by IC203. The amplified modulation signal is added to modulation varicap of VHF VCO and transmitted from VHF side.

9) Tone Burst Output Circuit

When Down key is pressed while holding the PTT key down, the square pulse is output from CPU IC401 Pin14 (B1750). It is amplified by IC203 after being integrated by CR. The amplified signal is added to each VCO modulation varicap to output.

10) CTCSS Tone Encoder Circuit

The mimic sine wave is output from IC401 Pin11. It is integrated by CR, and converted to analogue wave to obtain 50 waves within 67.0~254.1. The tone is added to VCO to output.

11) CTCSS Tone Decoder Circuit (EJ-24U)

In IC1(VHF) or IC2 (UHF), a kind of tone frequency is settled by the serial data selected from 50 kinds of frequencies within 67.0~254.1Hz . While receiving the voice and tone signals input from RAV (VHF) or RAU (UHF) are supplied to Pin1, and tone signal only is selected at the low-pass filter in IC. When the signal is accordance with the tone frequency which is settled by the serial data, "L" level is output to TDV (VHF) or TDU (UHF) terminal. The "L" level signal is input to IC401, Pin32 and Pin33, then the squelch is opened When the tone signal is not accordance with the settled frequency, "H" level is output to the TDV (VHF) or TDU (UHF) terminal. The "H" level signal is input to IC401, Pin32 and Pin33, then the squelch is closed.

12) 9600bps Packet Circuit

In the 9600 packet mode, PTT is provided through the UART terminal of JK1 to IC401 Pin22, then it is transmitted in "L" level. The modulation signal from TNC is provided through 9600 PKT terminal of JK2. It is amplified and limited in Q29, unmuted in Q26 and Q27, and the VCO is modulated, then transmitted. The detection output of IF IC2 or IC202 is input to the signal switch IC4 via butter Q23 or Q235. The input V/U signal switches the input signal of IC4 according to the signal from CPU IC401 Pin33. Then the MAIN band signal is output from Pin1 to JK2.

13) Clone Circuit

In the Clone mode, the data which is output from IC401 Pin21 of Master unit is fed to the IC401 Pin22 of the Slave unit through the UART terminal JK1 and connecting cable.

14) CPU I/O Port

No.	Pin Name	Function	I/O	Logic	Description
1	C1	C1	-	-	NC
2	VL1	V1	-	-	LCD Power supply
3	P67/AN7	V/U	I	A/D	Key input (VHF/UHF/TOT key switch)
4	P66/AN6	UP/DN	I	A/D	Key input (UP/DOWN/CALL key switch)
5	P65/AN5	SMU	I	A/D	UHF side S meter voltage input
6	P64/AN4	SQU	I	A/D	UHF side SQ noise voltage input
7	P63/SCLK22/AN3	BP1	I	A/D	Destination setting (T=5V, E=3.2V)
8	P62SCLK21/AN2	BP2	I	A/D	Extension specification
9	P61/SOUT2/AN1	SQV	I	A/D	VHF side SQ noise voltage input
10	P60/SIN2/AN0	SMV	I	A/D	VHF side S meter voltage input
11	P57/ADT/DA2	TONE	O	D/A	CTCSS tone output (50 waves)
12	P56/DA1	MMUT	O	H	Microphone mute OFF control output (TX="H")
13	P55/CNTR1	SDU	O	H	UHF Squelch signal output (When squelch is open = "H")
14	P54/CNTR0	B1750	I/O	A/D/H	Extension specification (when PSW is ON)/ Tone burst output
15	P53/RTP1	DATU	O	Pulse	UHF side PLL data output
16	P52/RTP0	CKU	O	Pulse	UHF side PLL clock output
17	P51/PWM1	STPU	O	Pulse	UHF side PLL reset output
18	P50/PWM0	PTT	I	L	Key input (PTT)
19	P47/SROY1	MUTU	O	H	UHF side AF signal mute control output ("H" = Mute is ON)
20	P46/SCLK1	XMUT	O	L	AF unmute output in cross band repeater mode (XBR = "L")
21	P45/TXD	TXD	O	Pulse	Clone data output
22	P44/RXD	RXD	I	Pulse	Clone data input (9600 packet = PTT input "L" = TX)
23	P43/S/TOUT	BEEP	O	H	Beep sound output
24	P42/INT2	ENC2	I	L	Rotary encoder B input
25	P41/INT1	ENC1	I	L	Rotary encoder A input
26	P40	UL	I	L	PLL unlock input (L = unlock)
27	P77	TP	I	H	Trunking mode input (H = Trunking mode)
28	P76	MONI	I/O	L	Key input (MONITOR) / 9600 mode (PTT ON = "L")
29	P75	MHZ	I	L	Key input (MHz)
30	P74	V/M	I	L	Key input (VFO/MR switch)
31	P73	FUNC	I	L	key input (FUNC)
32	P72	TDV	I	L	VHF CTCSS tone detection (when the tone is detected = "L")
33	P71	TDU	I/O	L/H	UHF CTCSS tone detection/RX switch in 9600 mode (VHF=L)
34	P70/INT0	BU	I	L	Backup signal input ("L"=Backup)
35	RESET	RES	I	L	Reset signal input ("L"=Reset)
36	Xcin	XC1	-	-	NC
37	Xcout	XC0	-	-	NC
38	Xin	XIN	I	-	CPU clock input (4.1943MHz)
39	Xout	XOUT	O	-	CPU clock output (4.1943MHz)

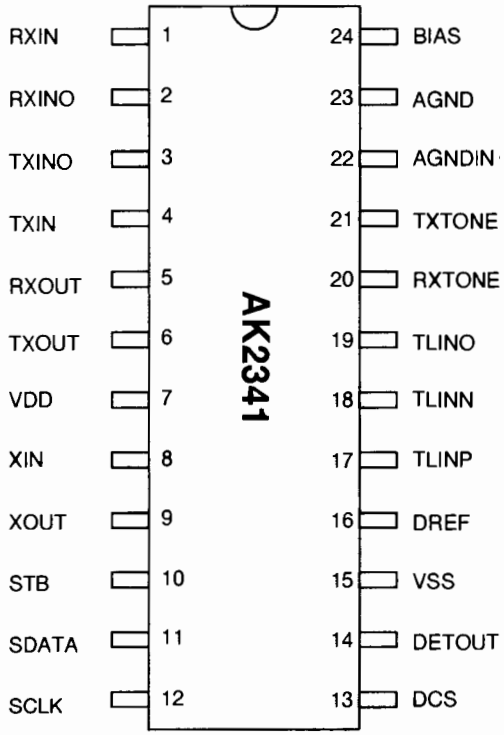
No.	Pin Name	Function	I/O	Logic	Description
40	Vss	GND	-	-	GND
41	P27	SDV	O	H	VHF squelch signal output (when squelch is open = "H")
42	P26	MUTV	-	-	VHF AF signal mute control output (H=Mute is ON)
43	P25	STPV	O	Pulse	VHF PLL reset output
44	P24	DATV	O	Pulse	VHF PLL/CTCSS data output
45	P23	CKV	O	Pulse	VHF PLL/CTCSS clock output
46	P22	SCL	O	Pulse	EEPROM clock output
47	P21	SDA	I/O	Pulse	EEPROM data input/output
48	P20	LOW	O	H	Transmitting output switch ("H"=Low output)
49	P17	STB2	O	Pulse	CTCSS UHF strobe signal output
50	P16	TID	I/O	Pulse	CTCSS board detection/CTCSS VHF strobe signal output
51	P15/SEG39	SEG39	O	H	Segment output for LCD
↓	↓	↓	↓	↓	↓
90	SEG0	SEG0	O	H	Segment output for LCD
91	Vcc	VCC	-	-	5V Power supply
92	Vref	AVCC	-	-	Reference power supply for A/D conversion
93	AVss	GND	-	-	GND
94	COM3	COM3	-	-	NC
95	COM2	COM2	O	-	Common output 2 for LCD
96	COM1	COM1	O	-	Common output 1 for LCD
97	COM0	COM0	O	-	Common output 0 for LCD
98	VL3	V3	-	-	Power supply for LCD
99	VL2	V2	-	-	Power supply for LCD
100	C2	C2	-	-	NC

SEMICONDUCTOR DATA

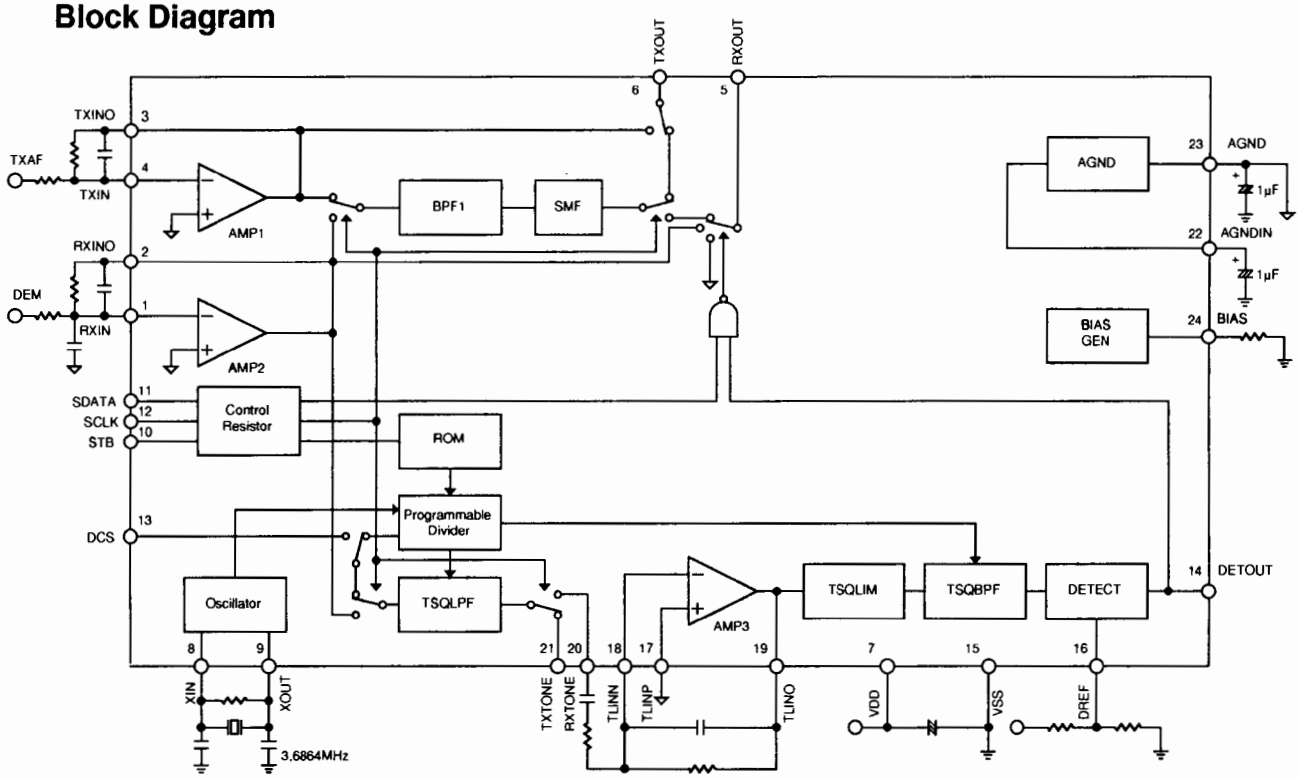
1) AK2341 (XA0239) EJ24u (option)

CTCSS Encoder/Decoder

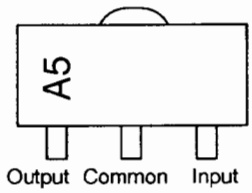
Pin No.	Pin Name	I/O	Function
1	RXIN	I	RX Signal Input
2	RXINO	O	AMP2 Output
3	TXINO	O	AMP1 Output
4	TXIN	I	TX Audio Input
5	RXOUT	O	RX Audio Output
6	TXOUT	O	TX Audio Output
7	VDD	-	Power Supply (1.8 ~ 5.5V)
8	XIN	I	Crystal Terminal (3.6864MHz)
9	XOUT	O	Crystal Terminal (3.6864MHz)
10	STB	I	Strobe for Serial Data
11	SDATA	I	Serial Data
12	SCLK	I	Serial Clock
13	DCS	I	DCS Input
14	DETOUT	O	Tone Detection Output (Detect: Low)
15	VSS	-	Ground
16	DREF	I	Tone Detection Level Adjust Input
17	TLINP	I	RX Tone Signal Reference Input
18	TLINN	I	RX Tone Signal Input
19	TLINO	O	AMP3 Output
20	RXTONE	O	RX Tone Signal Output
21	TXTONE	O	TX Tone Signal Output
22	AGNDIN	I	Analog Ground Input
23	AGND	O	Analog Ground Output
24	BIAS	I	Bias Input



Block Diagram



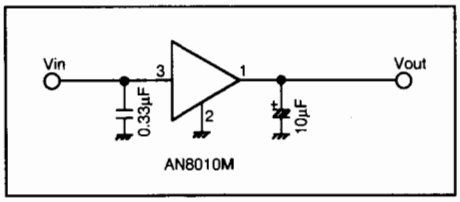
2) AN78L05M (XA0238)
5V Voltage Regulator

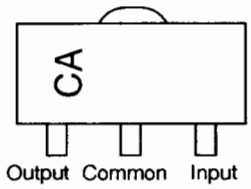


AN78L05M

3) AN8010M (XA0119)
Voltage Regulator

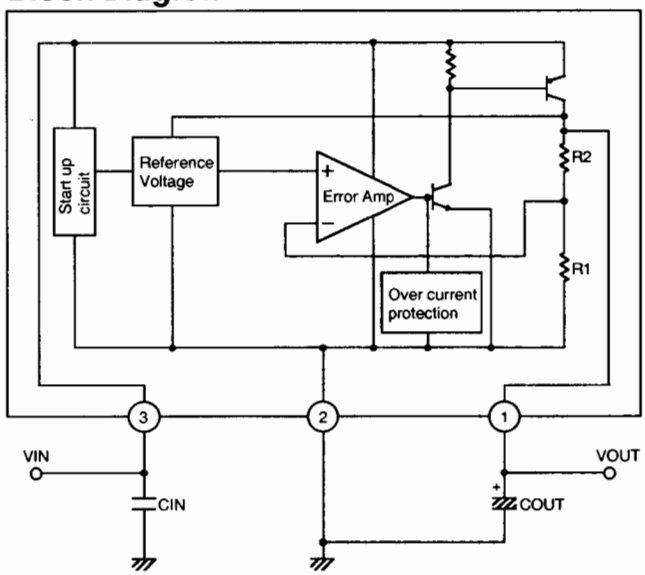
Test Circuit



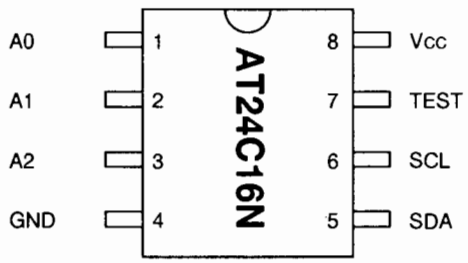


AN8010M

Block Diagram



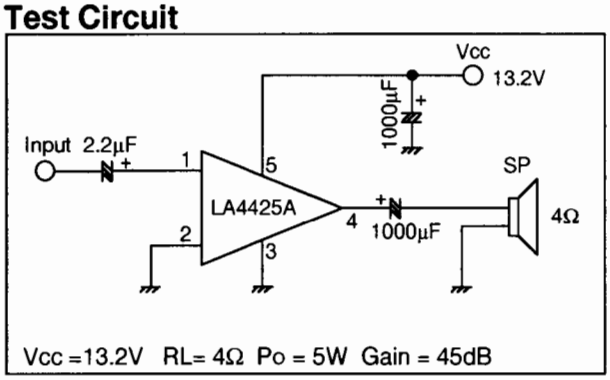
4) AT24C16N-10SI-2.7 (XA0368)
16K bits CMOS Serial EEPROM

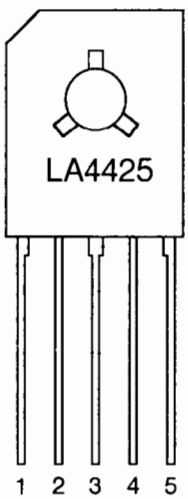


Pin Name	Function
A0 to A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
Test	Test Input (GND or Vcc)
NC	No connection

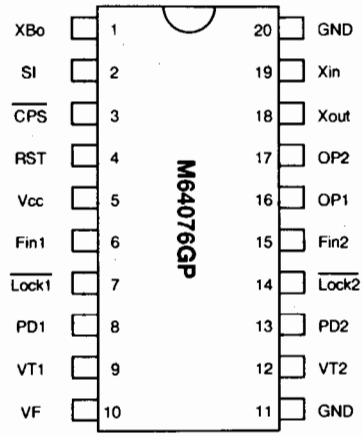
5) LA4425A (XA0410)
5W Audio Power Amplifiers

Test Circuit



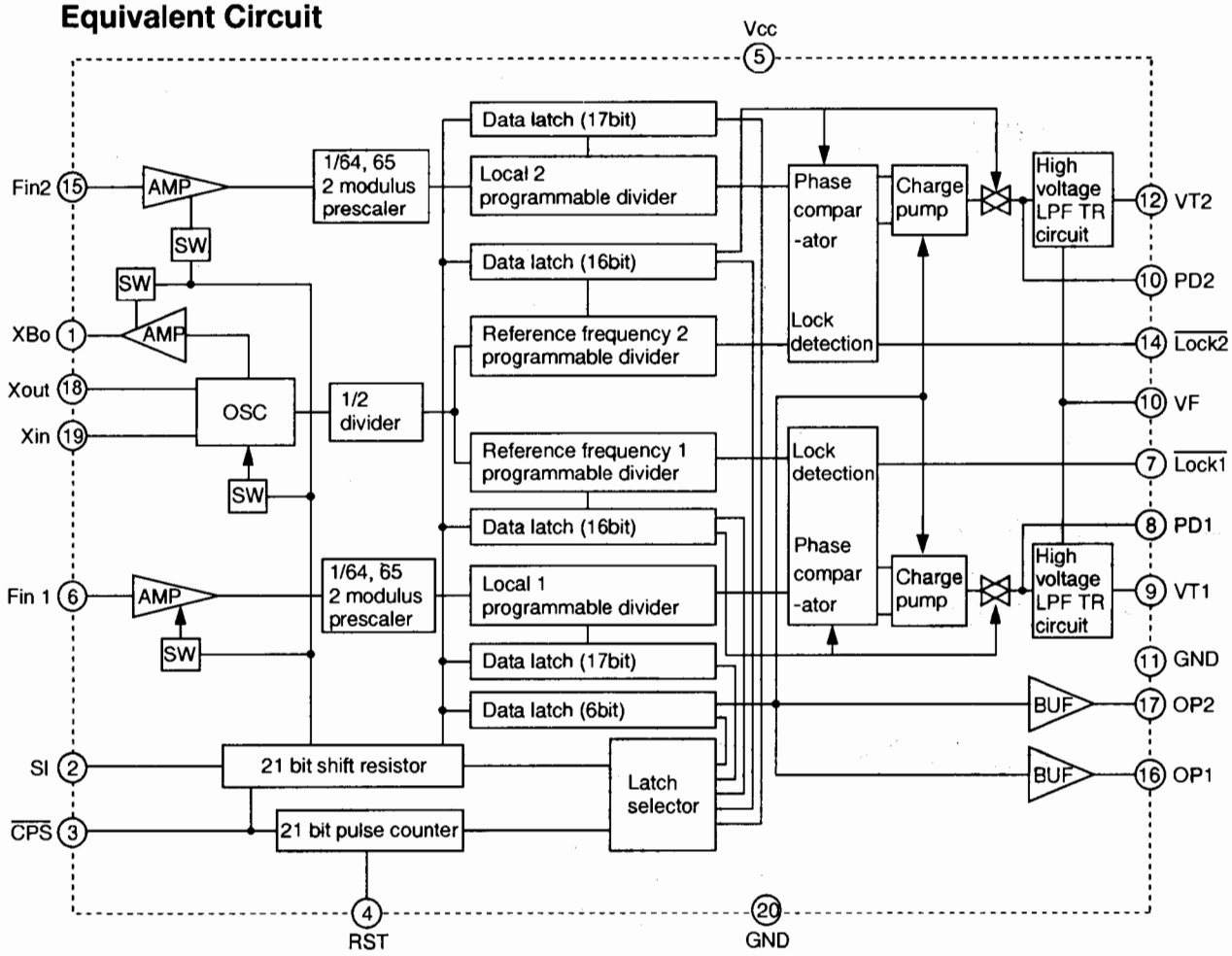


6) M64076GP (XA0352)
Dual PLL Synthesizer



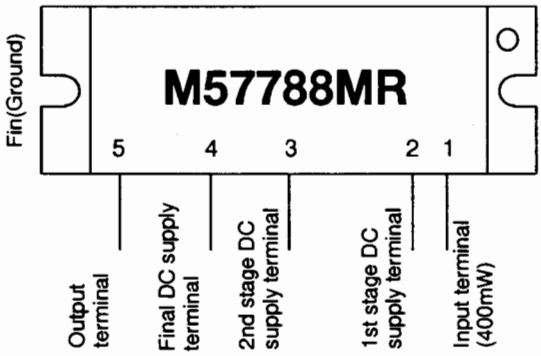
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	Fin=80~520MHz Vin=-10dBm	2.7	-	5.5	V
LPF supply voltage	VF		-	9	12	V
Local oscillator input level	Vin	Fin=80~520MHz Vcc=2.7~5.5V	-20	-	-4	dBm
Local oscillator input frequency	Fin	Vin=-20~-4dBm Vcc=2.7~5.5V	80	-	520	MHz
Xin input level	Vxin	Vcc=2.7~5.5V Fxin=10~25MHz Sine wave	0.4	-	1.4	Vp-p
Xin input frequency	Fxin	Vcc=2.7~5.5V Vxin=0.4~1.4Vp-p	10	-	25	MHz

Equivalent Circuit



7) M57738LR (XA0447)
M57788MR (XA0313)
M57788HR (XA0448)

UHF FM 35W RF Power Module

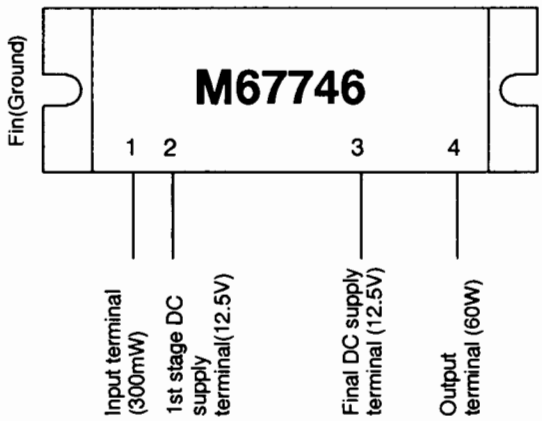


Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17.0	V
Total current	Icc	12	A
Input power	Pin	0.8	W
Output power	Po	50	W
Operation case temperature	Tc(op)	-30~+110	°C
Storage temperature	Tstg	-40~+110	°C

f=430~450MHz, Vcc1≦13.5V, Zg=Zl=50Ω

8) M67746 (XA0412)

144 ~ 148MHz 60W
RF Power Module

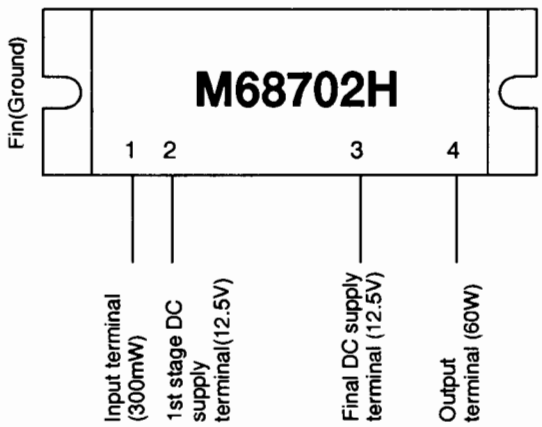


Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17	V
Total current	Icc	20	A
Input power	Pin(max)	600	mW
Output power	Po(max)	70	W
Operation case temperature	Tc(op)	-30 to +110	°C
Storage temperature	Tstg	-40 to +110	°C

Zg=Zl=50Ω

9) M68702H (XA0444)

150 ~ 175MHz 60W
RF Power Module

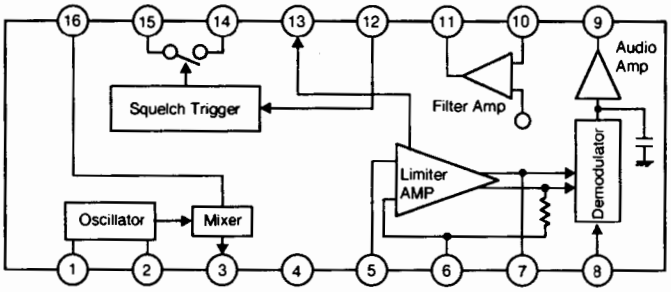


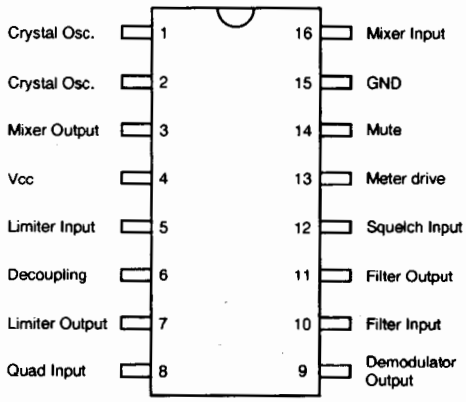
Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17	V
Total current	Icc	20	A
Input power	Pin(max)	600	mW
Output power	Po(max)	75	W
Operation case temperature	Tc(op)	-30 to +110	°C
Storage temperature	Tstg	-40 to +110	°C

Zg=Zl=50Ω

10) MC3372VM (XA0343)
Low Power FM IF

Equivalent Circuit



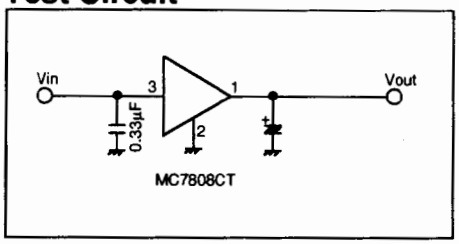


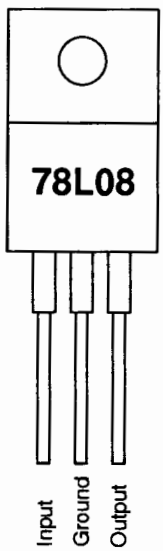
Ta=25°C

Parameter	Pin No.	Symbol	Ratings	Unit
Max. supply voltage	4	Vcc	2.4~9.0	Vdc
RF input voltage	16	Vrf	0.005~10	mVrms
RF input frequency	16	Frf	0.1~100	MHz
Oscillator input voltage	1	Vlocal	80~400	mVrms
IF frequency	-	Fif	455	kHz
Limiter amplifier input voltage	5	Vif	0~400	mVrms
Filter amplifier input voltage	10	Vfa	0.1~300	mVrms
Squelch input voltage	12	Vsq	0 or 2	Vdc
Mute sink current	14	Isq	0.1~30	mA
Temperature range	-	TA	-30~+75	°C

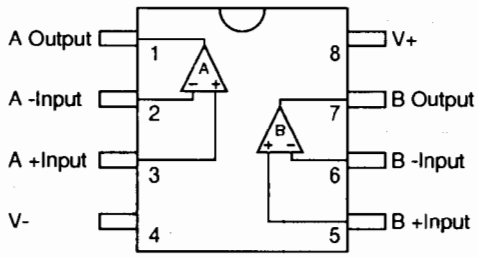
11) MC7808CT (XA0082)
8V Voltage Regulator

Test Circuit



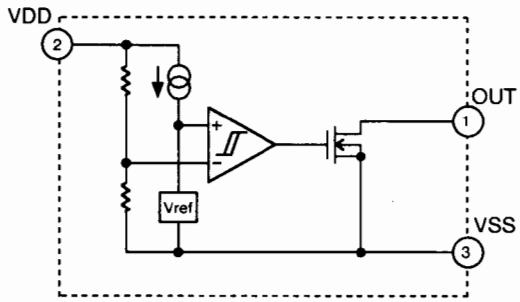


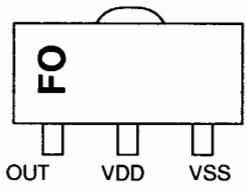
12) NJM4558 (XA0097)
Operational Amplifiers



13) RH5VA60AA (XA0315)
C-MOS Voltage Detector

Equivalent Circuit

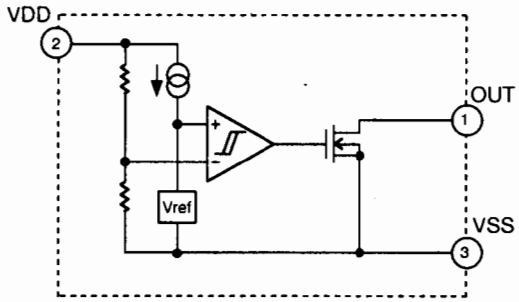


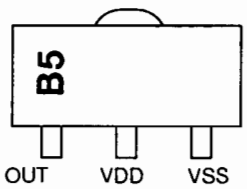


RH5VA60AA

14) RN5VL25AA-T1 (XA0309)
C-MOS Voltage Detector

Equivalent Circuit





RL5VL25AA

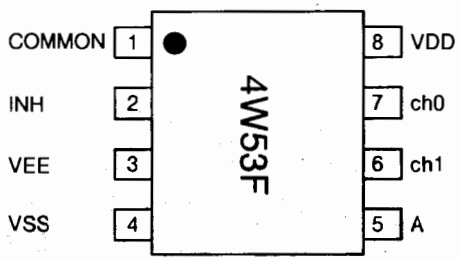
15) TC4W53FU (XA0348)

Multiplexer/Demultiplexer

Function Table

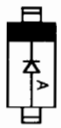
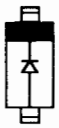
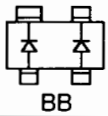
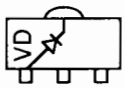
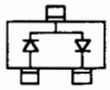
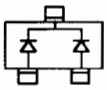
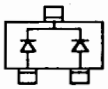
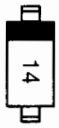
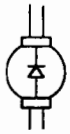
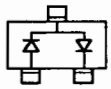
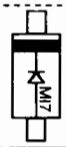
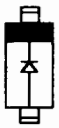
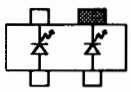
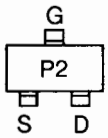
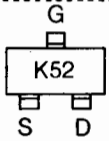
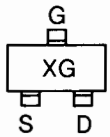
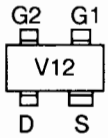
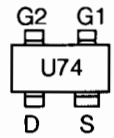
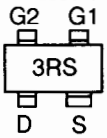
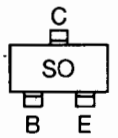
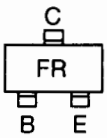
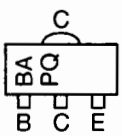
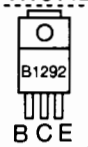
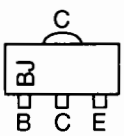
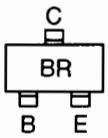
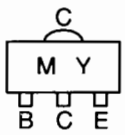
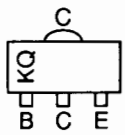
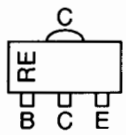
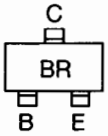
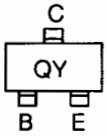
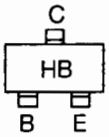
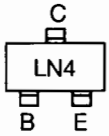
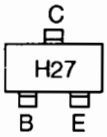
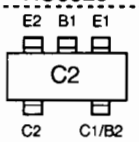
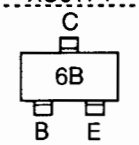
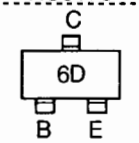
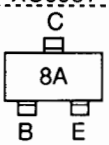
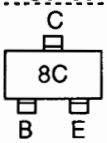
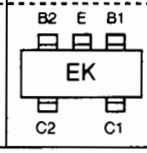
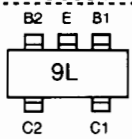
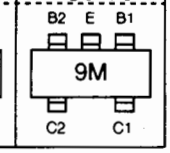
Control input		ON channel
INH	A	
L	L	ch 0
L	H	ch 1
H	*	NONE

* Don't Care

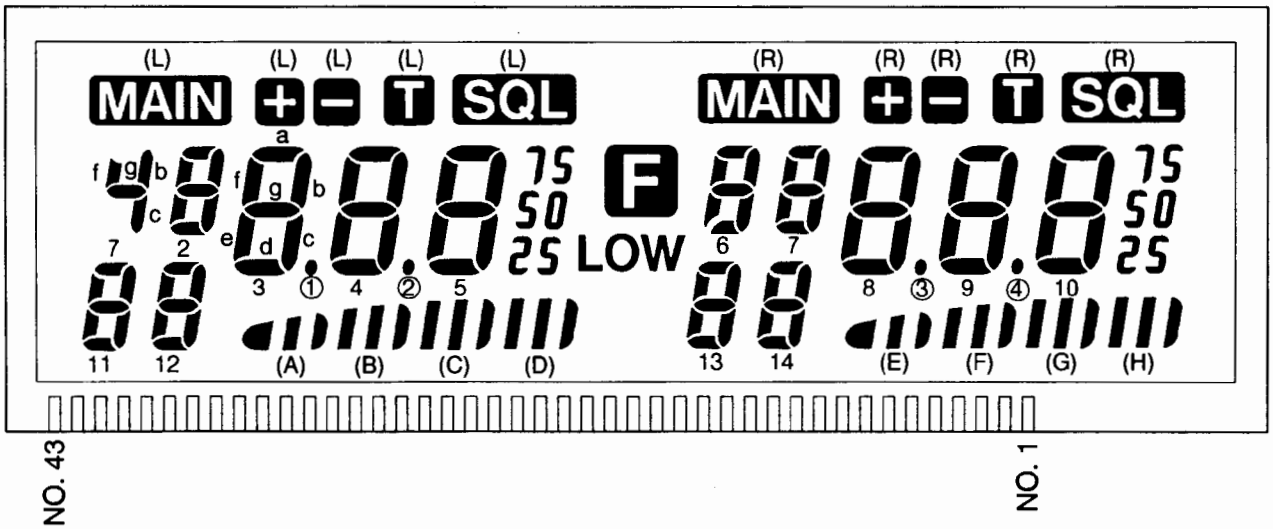


16) Transistor, Diode and LED Outline Drawings

Top View

1SS355	1SS356	1SV214	1SV215	1SV237	1SV262	1SV268	DA204U
XD0254	XD0272	XD0131	XD0132	XD0141	XD0300	XD0301	XD0130
				 BB			 K
DAN202U	DAN235U	DTZ5.1A	DTZ11B	DSA3AI	MA729	MA742	MA8110H
XD0230	XD0246	XD0136	XD0187	XD0274	XD0291	XD0250	XD0255
 N	 M					 M1U	
MI407	RN731V	UDZ3.0B	LT1EP53A	2SK1577	2SK508	2SK880GR	3SK131V12
XD0013	XD0257	XD0304	XL0039	XE0022	XE0010	XE0021	XE0028
			 BB	 G P2 S D	 G K52 S D	 G XG S D	 G2 G1 V12 D S
3SK177	3SK184S	2SA1162Y	2SA1576	2SB1132	2SB1292	2SB1302	2SC2412K
XE0024	XE0013	XT0017	XT0094	XT0061	XT0112	XT0126	XT0037
 G2 G1 U74 D S	 G2 G1 3RS D S	 C SO B E	 C FR B E	 C BA PQ B C E	 O B1292 B C E	 C BJ B C E	 C BR B E
2SC2873	2SC2954	2SC3357	2SC4081	2SC4215	2SC4245	2SC5226	DTC363EK
XT0113	XT0084	XT0048	XT0095	XT0124	XT0125	XT0146	XU0160
 C M Y B C E	 C KQ B C E	 C RE B C E	 C BR B E	 C QY B E	 C HB B E	 C LN4 B E	 C H27 B E
FMC2	UN5112	UN5114	UN5211	UN5213	XN111M	XN1213	XP1215
XU0028	XU0174	XU0179	XU0061	XU0180	XU0046	XU0054	XU0178
 E2 B1 E1 C2 C2 C1/B2	 C 6B B E	 C 6D B E	 C 8A B E	 C 8C B E	 B2 E B1 EK C2 C1	 B2 E B1 9L C2 C1	 B2 E B1 9M C2 C1

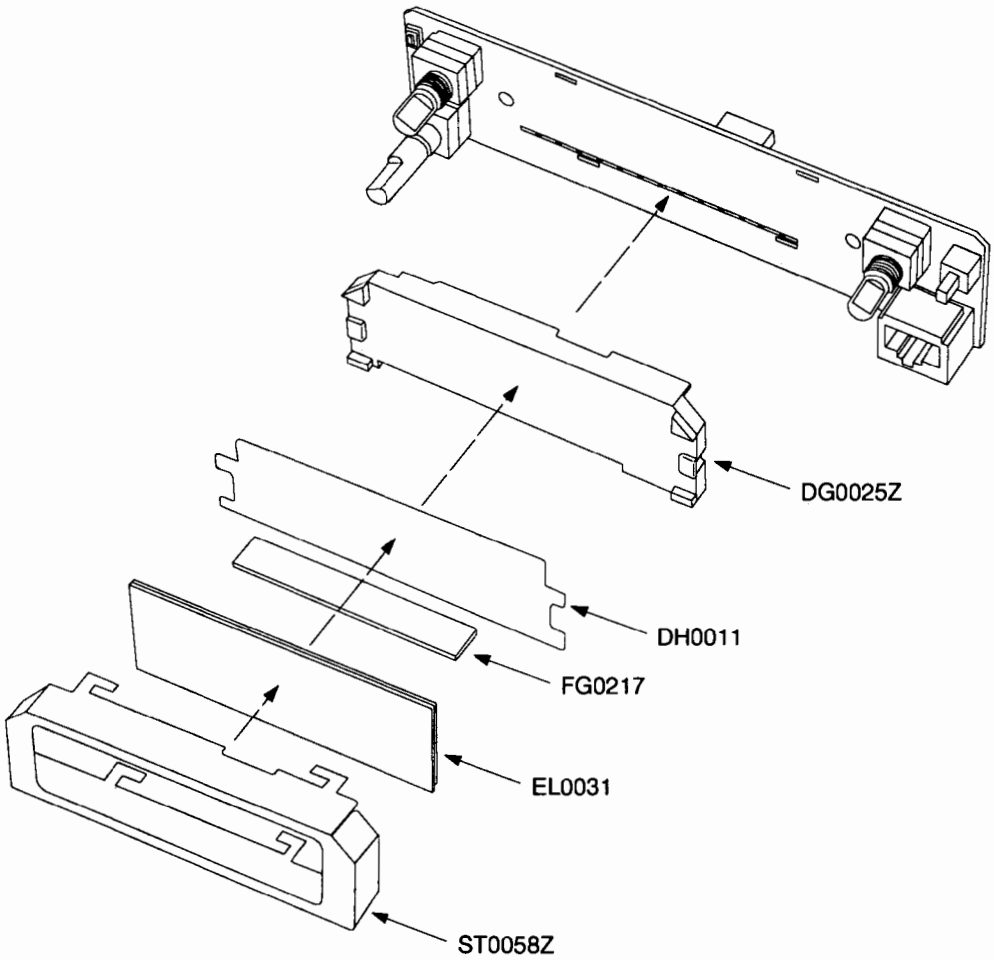
17) LCD Connection

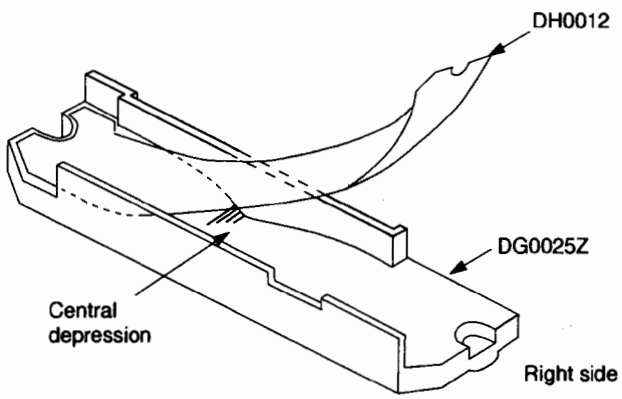


No.	COM.3	COM.2	COM.1	No.	COM.3	COM.2	COM.1
1	COM.3			26	5c	5b	(C) ///
2		COM.2		27	5g	5a	5d
3			COM.1	28	5e	5f	② •
4	(R) SQL	(R) T	(H) ///	29	4c	4b	(B) ///
5	(R) 50	(R) 75	(R) 25	30	4g	4a	4d
6	10c	10b	(G) ///	31	4e	4f	① •
7	10g	10a	10d	32	3c	3b	(A) ///
8	10e	10f	④ •	33	3g	3a	3d
9	9c	9b	(F) ///	34	3e	3f	(L) SQL
10	9g	9a	9d	35	2c	2b	(L) T
11	9e	9f	③ •	36	2g	2a	2d
12	8c	8b	(E) ///	37	2e	2f	(L) −
13	8g	8a	8d	38	12c	12b	(L) +
14	8e	8f	(R) −	39	12g	12a	12d
15	7c	7b	(R) +	40	12e	12f	1bc
16	7g	7a	7d	41	11c	11b	1fg
17	7e	7f	7a	42	11g	11a	11d
18	14c	14b	6bcg	43	11e	11f	(L) MAIN
19	14g	14a	14d				
20	14e	14f	6e				
21	13c	13b	6f				
22	13g	13a	13d				
23	13e	13f	(R) MAIN				
24	LOW	F	(D) ///				
25	(L) 50	(L) 75	(L) 25				

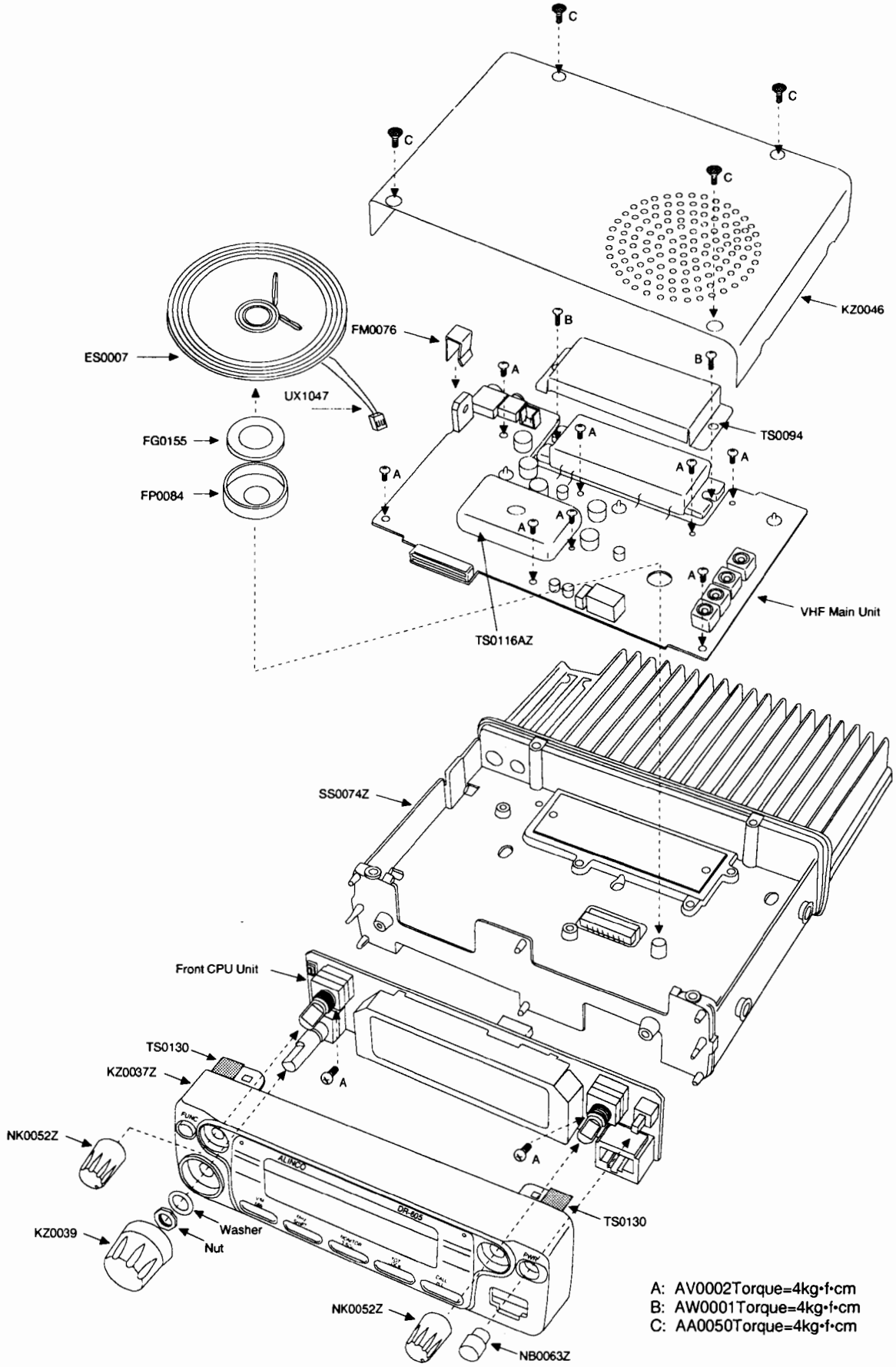
EXPLODED VIEW

1) LCD Assembly



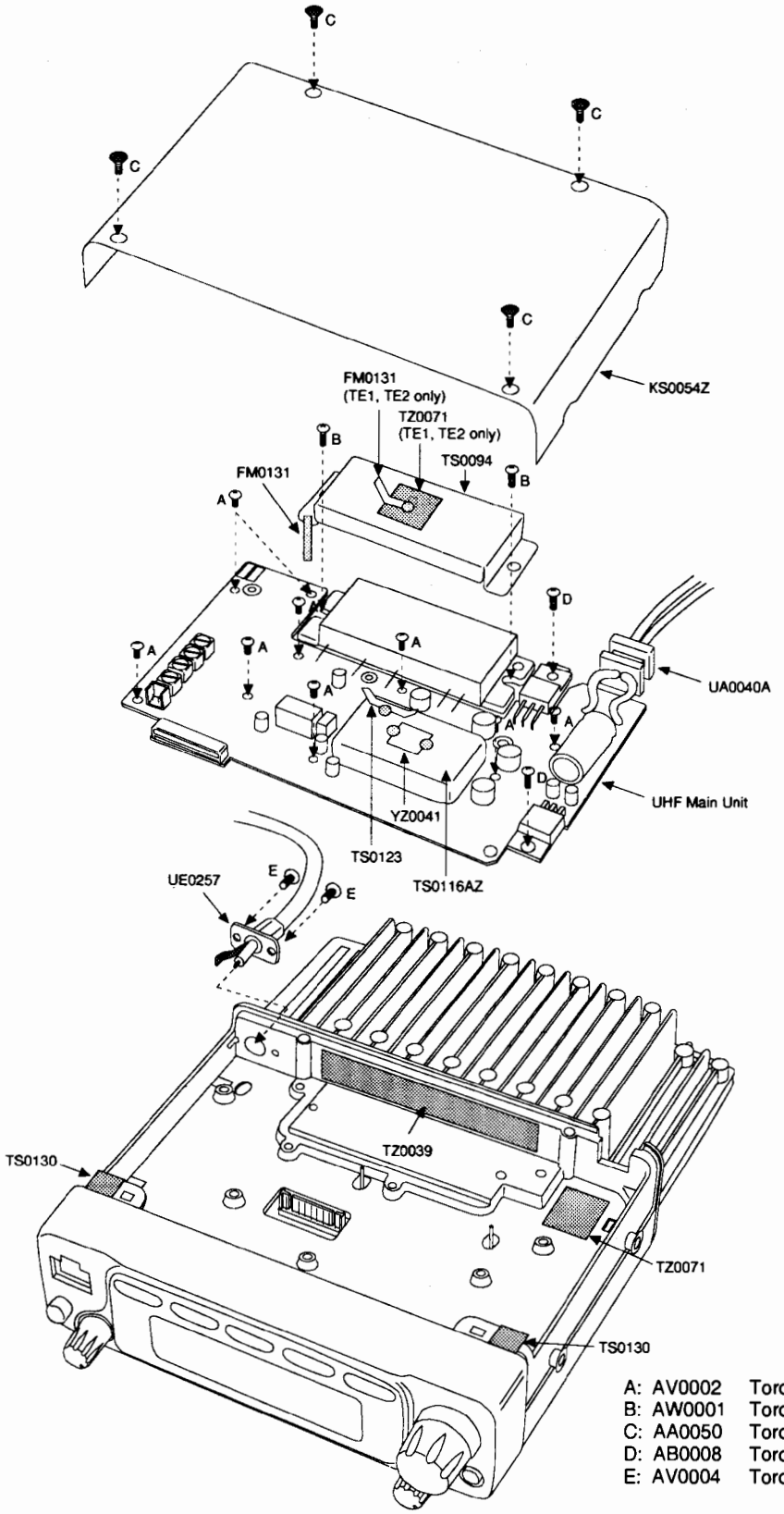


2) VHF Unit Assembly



A: AV0002Torque=4kg•f•cm
B: AW0001Torque=4kg•f•cm
C: AA0050Torque=4kg•f•cm

3) UHF Unit Assembly



A: AV0002 Torque=4kg•f•cm
B: AW0001 Torque=4kg•f•cm
C: AA0050 Torque=4kg•f•cm
D: AB0008 Torque=4kg•f•cm
E: AV0004 Torque=4kg•f•cm

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
		VHF MAIN Unit		
C1	CU9018	Chip C.	C3216JB1C105MT-N	
C2	CE0312	Electrolytic.C	ECEV1CA100R	
C3	CU3044	Chip C.	C1608JB1H562KT-A	
C4	CU3044	Chip C.	C1608JB1H562KT-A	
C5	CU8035	Chip C.	C2012B1E393K	
C6	CE0312	Electrolytic.C	ECEV1CA100R	
C7	CU3047	Chip C.	C1608JB1H103KT-A	
C8	CU8034	Chip C.	C2012X7R1E333K	
C9	CU3041	Chip C.	C1608JB1H332KT-A	
C10	CU3049	Chip C.	C1608JB1E153KT-A	
C11	CU8042	Chip C.	C2012JB1C104KT-A	
C12	CU9018	Chip C.	C3216JB1C105MT-N	
C13	CU3035	Chip C.	C1608JB1H102KT-A	
C14	CS0065	Chip Tantal	TMCSA1D684MTR	
C15	CU8042	Chip C.	C2012JB1C104KT-A	
C16	CU3047	Chip C.	C1608JB1H103KT-A	
C17	CU3035	Chip C.	C1608JB1H102KT-A	
C18	CU3035	Chip C.	C1608JB1H102KT-A	
C19	CU3023	Chip C.	T1608CH1H101JT-A	
C20	CU3023	Chip C.	T1608CH1H101JT-A	
C21	CU3047	Chip C.	C1608JB1H103KT-A	
C22	CU3051	Chip C.	C1608JB1E223KT-A	
C23	CE0312	Electrolytic.C	ECEV1CA100R	
C24	CU3059	Chip C.	C1608JF1E104ZTA	
C25	CU3059	Chip C.	C1608JF1E104ZTA	
C26	CU3023	Chip C.	T1608CH1H101JT-A	
C27	CU3059	Chip C.	C1608JF1E104ZTA	
C28	CU3035	Chip C.	C1608JB1H102KT-A	
C29	CU3035	Chip C.	C1608JB1H102KT-A	
C30	CU3018	Chip C.	C1608CH1H390JT-A	
C31	CU3047	Chip C.	C1608JB1H103KT-A	
C32	CU3019	Chip C.	C1608CH1H470JT-A	
C33	CU3035	Chip C.	C1608JB1H102KT-A	
C34	CU3035	Chip C.	C1608JB1H102KT-A	
C35	CU3015	Chip C.	C1608CH1H220JT-A	
C36	CU3015	Chip C.	C1808CH1H220JT-A	T,E
C36	CU3014	Chip C.	C1608CH1H180JT-A	1,2
C37	CU3035	Chip C.	C1608JB1H102KT-A	
C38	CU3016	Chip C.	C1608CH1H270JT-A	
C39	CU3035	Chip C.	C1608JB1H102KT-A	
C40	CU3035	Chip C.	C1608JB1H102KT-A	
C41	CU0060	Chip C.	C2012CH1H470 J	
C42	CU3035	Chip C.	C1608JB1H102KT-A	
C43	CU3035	Chip C.	C1608JB1H102KT-A	
C44	CU3015	Chip C.	C1608CH1H220JT-A	
C45	CU3012	Chip C.	C1608CH1H120JT-A	
C46	CU3015	Chip C.	C1608CH1H220JT-A	T,E
C46	CU3012	Chip C.	C1608CH1H120JT-A	1,2
C47	CU3035	Chip C.	C1608JB1H102KT-A	
C49	CE0315	Electrolytic.C	ECEV1CA470P#	
C50	CE0312	Electrolytic.C	ECEV1CA100R	
C51	CU3035	Chip C.	C1608JB1H102KT-A	
C52	CE0312	Electrolytic.C	ECEV1CA100R	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C53	CU3035	Chip C.	C1608JB1H102KT-A	
C54	CC5052	Ceramic C.	RCC05SL040J-L46AE	T,E
C54	CC5050	Ceramic C.	RCC05SL020J-L46AE	1,2
C56	CU3035	Chip C.	C1608JB1H102KT-A	
C57	CU3035	Chip C.	C1608JB1H102KT-A	
C58	CC5060	Ceramic C.	DD05-979SL150J500	
C59	CC5025	Ceramic C.	HM60SJYB 102K	
C60	CC5067	Ceramic C.	RCC05SL330J-L46AE	T,E
C60	CC5065	Ceramic C.	RCC05SL270J-L46AE	1,2
C61	CU3002	Chip C.	C1608CH1H010CT-A	
C62	CC5069	Ceramic C.	RCC06SL470J-L46AU	
C63	CC5068	Ceramic C.	RCC06SL390J-L46AU	T,E
C63	CC5065	Ceramic C.	RCC05SL270J-L46AE	1,2
C64	CU3002	Chip C.	C1608CH1H010CT-A	
C65	CC5067	Ceramic C.	RCC05SL330J-L46AE	
C67	CU3003	Chip C.	C1608CH1H020CT-A	
C68	CU3003	Chip C.	C1608CH1H020CT-A	
C69	CU3035	Chip C.	C1608JB1H102KT-A	
C70	CU3035	Chip C.	C1608JB1H102KT-A	
C71	CU3035	Chip C.	C1608JB1H102KT-A	
C72	CU3035	Chip C.	C1608JB1H102KT-A	
C74	CU3035	Chip C.	C1608JB1H102KT-A	
C75	CU3023	Chip C.	C1608CH1H101JT-A	T,E
C75	CU3021	Chip C.	C1608CH1H680JT-A	1,2
C76	CU3035	Chip C.	C1608JB1H102KT-A	
C77	CU3035	Chip C.	C1608JB1H102KT-A	
C78	CU3019	Chip C.	C1608CH1H470JT-A	
C79	CU3002	Chip C.	C1608CH1H010CT-A	
C80	CU3019	Chip C.	C1608CH1H470JT-A	
C81	CU3002	Chip C.	C1608CH1H010CT-A	
C82	CU3019	Chip C.	C1608CH1H470JT-A	
C83	CU3017	Chip C.	C1608CH1H330JT-A	T,E
C84	CU3035	Chip C.	C1608JB1H102KT-A	
C85	CU3047	Chip C.	C1608JB1H103KT-A	
C86	CU3035	Chip C.	C1608JB1H102KT-A	
C87	CU3047	Chip C.	C1608JB1H103KT-A	
C88	CU3015	Chip C.	C1608CH1H220JT-A	
C89	CU3009	Chip C.	C1608CH1H080CT-A	
C90	CS0237	Chip Tantal	TMCMA1A475MTR	
C91	CU3035	Chip C.	C1608JB1H102KT-A	
C93	CU3035	Chip C.	C1608JB1H102KT-A	
C94	CS0236	Chip Tantal	TMCMA0J685MTR	
C95	CU3035	Chip C.	C1608JB1H102KT-A	
C96	CE0315	Electrolytic.C	ECEV1CA470P#	
C97	CU3035	Chip C.	C1608JB1H102KT-A	
C98	CU3035	Chip C.	C1608JB1H102KT-A	
C99	CU3035	Chip C.	C1608JB1H102KT-A	
C100	CU3035	Chip C.	C1608JB1H102KT-A	
C101	CU3035	Chip C.	C1608JB1H102KT-A	
C102	CU3035	Chip C.	C1608JB1H102KT-A	
C103	CU3035	Chip C.	C1608JB1H102KT-A	
C104	CU3035	Chip C.	C1608JB1H102KT-A	
C108	CU3047	Chip C.	C1608JB1H103KT-A	
C109	CU3047	Chip C.	C1608JB1H103KT-A	

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
C110	CE0374	Electrolytic.C	16V 100BS	
C111	CU3019	Chip C.	C1608CH1H470JT-A	T,E
C111	CU3035	Chip C.	C1608JB1H102KT-A	1,2
C112	CU3016	Chip C.	C1608CH1H270JT-A	T,E
C113	CU3012	Chip C.	C1608CH1H120JT-A	T,E
C114	CU3009	Chip C.	C1608CH1H080CT-A	T,E
C114	CU3023	Chip C.	C1608CH1H101JT-A	1,2
C115	CU3023	Chip C.	C1608CH1H101JT-A	T,E
C116	CU3047	Chip C.	C1608JB1H103KT-A	T,E
C117	CU9018	Chip C.	C3216JB1C105MT-N	
C118	CU3035	Chip C.	C1608JB1H102KT-A	
C119	CU3035	Chip C.	C1608JB1H102KT-A	
C120	CU3047	Chip C.	C1608JB1H103KT-A	1,2
C121	CU9018	Chip C.	C3216JB1C105MT-N	
C125	CS0237	Chip Tantal	TMCMA1A475MTR	
C126	CU3047	Chip C.	C1608JB1H103KT-A	
C127	CE0342	Electrolytic.C	16MV 470HC TS	
C128	CU8042	Chip C.	C2012JB1C104KT-A	
C129	CU3059	Chip C.	C1608JF1E104ZTA	
C130	CU3035	Chip C.	C1608JB1H102KT-A	
C131	CU3035	Chip C.	C1608JB1H102KT-A	
C132	CU3047	Chip C.	C1608JB1H103KT-A	
C133	CS0237	Chip Tantal	TMCMA1A475MTR	
C134	CU3035	Chip C.	C1608JB1H102KT-A	
C135	CU3035	Chip C.	C1608JB1H102KT-A	
C136	CU3035	Chip C.	C1608JB1H102KT-A	
C137	CU3035	Chip C.	C1608JB1H102KT-A	
C138	CU3035	Chip C.	C1608JB1H102KT-A	
C139	CU3035	Chip C.	C1608JB1H102KT-A	
C140	CE0374	Electrolytic.C	16V 100BS	
C142	CE0374	Electrolytic.C	16V 100BS	
C143	CU3035	Chip C.	C1608JB1H102KT-A	
C144	CU3035	Chip C.	C1608JB1H102KT-A	
C145	CS0216	Chip Tantal	TMCMB1A106MTR	
C146	CS0237	Chip Tantal	TMCMA1A475MTR	
C147	CS0237	Chip Tantal	TMCMA1A475MTR	
C148	CU9018	Chip C.	C3216JB1C105MT-N	
C149	CU3035	Chip C.	C1608JB1H102KT-A	
C150	CU3035	Chip C.	C1608JB1H102KT-A	
C151	CU3003	Chip C.	C1608CH1H020CT-A	T,E
C152	CU3049	Chip C.	C1608JB1E153KT-A	1,2
C153	CU3047	Chip C.	C1608JB1H103KT-A	1,2
C154	CU8034	Chip C.	C2012X7R1E333KT	1,2
C155	CS0049	Chip Tantal	TMCSA1C105MTR	1,2
C156	CU3035	Chip C.	C1608JB1H102KT-A	
C157	CU8042	Chip C.	C2012JB1C104KTA	1,2
C158	CU3017	Chip C.	C1608CH1H330JT-A	1,2
CN1	UE0293	Connector	17PS-JE	
CN2	UE0043	Connector	PI22A02M	
CN3	UE0227	Connector	00 8283 0912 00 000	
CN4	UE0167	Connector	B6B-ZR	1,2
CN5	UE0080	Short Pin	16MM	
CN6	UE0080	Short Pin	16MM	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
CN7	UE0080	Short Pin	16MM	
D1	XD0136	Diode	DTZ5.1A TT11	
D2	XD0250	Diode	MA742-TX	
D3	XD0246	Diode	DAN235UT106	
D4	XD0254	Diode	1SS355 TE-17	
D5	XD0013	Diode	MI407	
D6	XD0301	Diode	1SV266	
D7	XD0250	Diode	MA742-TX	
D8	XD0250	Diode	MA742-TX	
D9	XD0130	Diode	DA204UT106	
D10	XD0132	Diode	1SV215 TPH4	
D11	XD0132	Diode	1SV215 TPH4	
D12	XD0132	Diode	1SV215 TPH4	
D13	XD0132	Diode	1SV215 TPH4	
D14	XD0254	Diode	1SS355 TE-17	
D21	XD0297	Diode	MA729-TX	1,2
FL1	XC0021	Filter	CFW450E	
FL2	XF0024	Filter	21.7MHz D21715BA3	
IC1	XA0412	IC	M67746	T,E
IC1	XA0444	IC	M68702H	1,2
IC2	XA0343	IC	MC3372VM-EL	
IC3	XA0410	IC	LA4425A	
IC4	XA0348	IC	TC4W53FU(TE12L)	
JK1	UJ0019	Connector	HSJ1493-01-010	
JK2	UJ0022	Connector	HSJ1102-01-540	
JP5	MGCL02AA	Wire	#30G02-020-02	1,2
L1	QC0067	Chip Coil	NL322522T-R10J	
L2	QC0063	Chip Coil	NL322522T-047J	
L3	QC0063	Chip Coil	NL322522T-047J	
L4	QC0063	Chip Coil	NL322522T-047J	
L5	QC0063	Chip Coil	NL322522T-047J	
L6	QKA35D	Coil	MR 3.0 3.5T 0.6	
L7	QKA95D	Coil	MR 3.0 9.5T 0.6	T,E
L7	QKAA5D	Coil	MR 3.0 10.5T 0.6	1,2
L8	QKA55E	Coil	MR3.0 5.5T 0.8	
L9	QKA45E	Coil	MR3.0 4.5T 0.8	
L10	QKA95D	Coil	MR 3.0 9.5T 0.6	
L11	QKA35E	Coil	MR3.0 3.5T 0.8	
L12	QKA35E	Coil	MR3.0 3.5T 0.8	
L13	QKA35E	Coil	MR3.0 3.5T 0.8	
L14	QA0112	Coil	V666SHS-063DAQ	
L15	QA0112	Coil	V666SHS-063DAQ	
L16	QA0112	Coil	V666SHS-063DAQ	
L17	QA0112	Coil	V666SHS-063DAQ	
L18	QC0043	Chip Coil	NL322522T-2R2J	
L19	QC0048	Chip Coil	NL322522T-100J	
L20	QC0066	Chip Coil	NL322522T-82J	

Note: Version1=TE1, Version2=TE2

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q1	XT0095	Transistor	2SC4081T106R	
Q2	XT0095	Transistor	2SC4081T106R	
Q3	XT0095	Transistor	2SC4081T106R	
Q4	XU0160	Transistor	DTC363EKT146	
Q5	XU0174	Transistor	UN5112-TX	
Q6	XT0095	Transistor	2SC4081T106R	
Q7	XT0124	Transistor	2SC4215-Y(TE85L)	
Q8	XT0124	Transistor	2SC4215-Y(TE85L)	
Q9	XT0048	Transistor	2SC3357T1 RE	
Q10	XT0084	Transistor	2SC2954-T1	
Q11	XE0013	FET	3SK184S-TX	
Q12	XE0013	FET	3SK184S-TX	
Q13	XT0095	Transistor	2SC4081T106R	
Q15	XE0021	FET	2SK880GRTE85L	
Q16	XT0017	Transistor	2SA1162YTE85	
Q17	XU0061	Transistor	UN5211-TX	
Q18	XT0061	Transistor	2SB1132T100Q	
Q19	XU0061	Transistor	UN5211-TX	
Q20	XU0180	Transistor	UN5213	
Q21	XU0061	Transistor	UN5211-TX	
Q22	XU0160	Transistor	DTC363EKT146	
Q23	XT0095	Transistor	2SC4081T106R	
Q25	XU0160	Transistor	DTC363EKT146	1,2
Q26	XT0095	Transistor	2SC4081T106R	
Q27	XU0179	Transistor	UN5114	
Q28	XU0180	Transistor	UN5213	
Q29	XT0095	Transistor	2SC4081T106R	
Q30	XT0146	Transistor	2SC5226-4-TL	
R1	RK3038	Chip R.	ERJ3GSYJ102V	
R2	RK3042	Chip R.	ERJ3GSYJ222V	
R3	RK3058	Chip R.	ERJ3GSYJ473V	
R4	RK3071	Chip R.	ERJ3GSYJ564V	
R5	RK3034	Chip R.	ERJ3GSYJ471V	
R6	RK3026	Chip R.	ERJ3GSYJ101V	
R7	RK3042	Chip R.	ERJ3GSYJ222V	
R8	RK3054	Chip R.	ERJ3GSYJ223V	
R9	RK3050	Chip R.	ERJ3GSYJ103V	
R10	RK3032	Chip R.	ERJ3GSYJ331V	
R11	RK3071	Chip R.	ERJ3GSYJ564V	
R12	RK3057	Chip R.	ERJ3GSYJ393V	
R13	RK3054	Chip R.	ERJ3GSYJ223V	
R14	RK3059	Chip R.	ERJ3GSYJ563V	
R15	RK3041	Chip R.	ERJ3GSYJ182V	
R16	RK3041	Chip R.	ERJ3GSYJ182V	
R17	RK3058	Chip R.	ERJ3GSYJ473V	
R18	RK3030	Chip R.	ERJ3GSYJ221V	
R19	RK3046	Chip R.	ERJ3GSYJ472V	
R20	RK3038	Chip R.	ERJ3GSYJ102V	
R21	RK3050	Chip R.	ERJ3GSYJ103V	
R22	RK3056	Chip R.	ERJ3GSYJ333V	
R23	RK3038	Chip R.	ERJ3GSYJ102V	
R24	RK3038	Chip R.	ERJ3GSYJ102V	
R25	RK3043	Chip R.	ERJ3GSYJ272V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R26	RK3056	Chip R.	ERJ3GSYJ333V	
R27	RK3050	Chip R.	ERJ3GSYJ103V	
R28	RK3066	Chip R.	ERJ3GSYJ224V	
R29	RK3038	Chip R.	ERJ3GSYJ102V	
R30	RK3062	Chip R.	ERJ3GSYJ104V	
R31	RK3038	Chip R.	ERJ3GSYJ102V	
R32	RK3071	Chip R.	ERJ3GSYJ564V	
R33	RK3038	Chip R.	ERJ3GSYJ102V	
R34	RK3026	Chip R.	ERJ3GSYJ101V	
R35	RK3026	Chip R.	ERJ3GSYJ101V	
R36	RK3045	Chip R.	ERJ3GSYJ392V	
R37	RK3038	Chip R.	ERJ3GSYJ102V	
R38	RK3026	Chip R.	ERJ3GSYJ101V	
R39	RK3038	Chip R.	ERJ3GSYJ102V	
R40	RK3038	Chip R.	ERJ3GSYJ102V	
R41	RK3045	Chip R.	ERJ3GSYJ392V	
R42	RK3014	Chip R.	ERJ3GSYJ100V	
R43	RK3034	Chip R.	ERJ3GSYJ471V	
R44	RK3022	Chip R.	ERJ3GSYJ470V	
R45	RK3034	Chip R.	ERJ3GSYJ471V	
R46	RK3043	Chip R.	ERJ3GSYJ272V	
R47	RK0107	Chip R.	ERJ6GEY0R00V	T,E
R47	RK3014	Chip R.	ERJ3GSYJ100V	1,2
R48	RK4026	Chip R.	ERJ-12YJ101V	
R49	RK4018	Chip R.	ERJ-12YJ220V	
R50	RK0036	Chip R.	ERJ6GEYJ122V	
R51	RK3042	Chip R.	ERJ3GSYJ222V	
R52	RK3042	Chip R.	ERJ3GSYJ222V	
R53	RK3058	Chip R.	ERJ3GSYJ473V	T,E
R53	RK3057	Chip R.	ERJ3GSYJ393V	1,2
R54	RK3050	Chip R.	ERJ3GSYJ103V	
R55	RD0062U	Carbon R.	ERDS2T473A	T
R56	RK3026	Chip R.	ERJ3GSYJ101V	
R58	RK3062	Chip R.	ERJ3GSYJ104V	
R59	RK3026	Chip R.	ERJ3GSYJ101V	
R60	RK3062	Chip R.	ERJ3GSYJ104V	
R61	RK3062	Chip R.	ERJ3GSYJ104V	
R62	RK3062	Chip R.	ERJ3GSYJ104V	
R63	RK3052	Chip R.	ERJ3GSYJ153V	
R65	RK3014	Chip R.	ERJ3GSYJ100V	
R66	RK3042	Chip R.	ERJ3GSYJ222V	
R67	RK3026	Chip R.	ERJ3GSYJ101V	
R68	RK3050	Chip R.	ERJ3GSYJ103V	
R69	RK3037	Chip R.	ERJ3GSYJ821V	
R70	RK3050	Chip R.	ERJ3GSYJ103V	
R71	RK3050	Chip R.	ERJ3GSYJ103V	
R72	RK3050	Chip R.	ERJ3GSYJ103V	
R73	RK3050	Chip R.	ERJ3GSYJ103V	
R74	RK3041	Chip R.	ERJ3GSYJ182V	
R75	RK3054	Chip R.	ERJ3GSYJ223V	
R76	RK3046	Chip R.	ERJ3GSYJ472V	
R77	RK3044	Chip R.	ERJ3GSYJ332V	
R78	RK3018	Chip R.	ERJ3GSYJ220V	
R79	RK3062	Chip R.	ERJ3GSYJ104V	

Note: Version1=TE1, Version2=TE2

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R81	RK3038	Chip R.	ERJ3GSYJ102V	
R82	RK3050	Chip R.	ERJ3GSYJ103V	
R83	RK3062	Chip R.	ERJ3GSYJ104V	
R84	RK3001	Chip R.	ERJ3GSY0R00V	T,E
R84	RK3026	Chip R.	ERJ3GSYJ101V	1,2
R86	RK3054	Chip R.	ERJ3GSYJ223V	T,E
R87	RK3058	Chip R.	ERJ3GSYJ473V	
R88	RK3034	Chip R.	ERJ3GSYJ471V	
R89	RK3062	Chip R.	ERJ3GSYJ104V	
R92	RK3026	Chip R.	ERJ3GSYJ101V	
R93	RK3074	Chip R.	ERJ3GSYJ105V	T,E
R94	RK3026	Chip R.	ERJ3GSYJ101V	T,E
R95	RK3038	Chip R.	ERJ3GSYJ102V	
R96	RK3038	Chip R.	ERJ3GSYJ102V	
R97	RK3038	Chip R.	ERJ3GSYJ102V	
R98	RK3038	Chip R.	ERJ3GSYJ102V	
R99	RK0105	Chip R.	ERJ6GEYJ2R2V	
R100	RK3062	Chip R.	ERJ3GSYJ104V	1,2
R101	RK3058	Chip R.	ERJ3GSYJ473V	
R102	RK3038	Chip R.	ERJ3GSYJ102V	
R103	RK3050	Chip R.	ERJ3GSYJ103V	
R104	RK3026	Chip R.	ERJ3GSYJ101V	
R105	RK3026	Chip R.	ERJ3GSYJ101V	
R106	RK3026	Chip R.	ERJ3GSYJ101V	
R107	RK3070	Chip R.	ERJ3GSYJ474V	
R108	RK3042	Chip R.	ERJ3GSYJ222V	
R109	RK3058	Chip R.	ERJ3GSYJ473V	E,1,2
R110	RK3038	Chip R.	ERJ3GSYJ102V	1,2
R111	RK3058	Chip R.	ERJ3GSYJ473V	1,2
R112	RK3054	Chip R.	ERJ3GSYJ223V	1,2
R113	RK3050	Chip R.	ERJ3GSYJ103V	
R114	RK3050	Chip R.	ERJ3GSYJ103V	
R115	RK3058	Chip R.	ERJ3GSYJ473V	
R116	RK3001	Chip R.	ERJ3GSY0R00V	
R118	RK3026	Chip R.	ERJ3GSYJ101V	
R119	RK0107	Chip R.	ERJ6GSY0R00V	
R120	RK3001	Chip R.	ERJ3GSY0R00V	T,E
R120	RK3050	Chip R.	ERJ3GSYJ103V	1,2
R121	RK3058	Chip R.	ERJ3GSYJ473V	
R122	RK3050	Chip R.	ERJ3GSYJ103V	
R123	RK0128	Chip R.	ERJ6GEYJ5R6V	
R124	RK0036	Chip R.	ERJ6GEYJ122V	
R125	RK3058	Chip R.	ERJ3GSYJ473V	
R126	RK3054	Chip R.	ERJ3GSYJ223V	
R127	RK3031	Chip R.	ERJ3GSYJ271V	
R128	RK3069	Chip R.	ERJ3GSYJ394V	
R129	RK3044	Chip R.	ERJ3GSYJ332V	
R130	RK3026	Chip R.	ERJ3GSYJ101V	
R131	RK3042	Chip R.	ERJ3GSYJ222V	
R132	RK3051	Chip R.	ERJ3GSYJ123V	
R133	RK3023	Chip R.	ERJ3GSYJ560V	T,E
R133	RK3026	Chip R.	ERJ3GSYJ101V	1,2
R134	RK3074	Chip R.	ERJ3GSYJ105V	
R135	RK3050	Chip R.	ERJ3GSYJ103V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R137	RK3018	Chip R.	ERJ3GSYJ220V	
R138	RK3046	Chip R.	ERJ3GSYJ472V	
R139	RK3050	Chip R.	ERJ3GSYJ103V	
R141	RK3054	Chip R.	ERJ3GSYJ223V	
R142	RK3048	Chip R.	ERJ3GSYJ682V	T,E
R142	RK3053	Chip R.	ERJ3GSYJ183V	1,2
R143	RK1998	Chip R.	MCR50JZHJ2R2E	
R144	RK3042	Chip R.	ERJ3GSYJ222V	1,2
R145	RK3054	Chip R.	ERJ3GSYJ223V	1,2
R146	RK3057	Chip R.	ERJ3GSYJ393V	1,2
R147	RK1107	Chip R.	ERJ8GEY0R00V	1,2
TC1	CT0012	Trim. C.	CTZ10AW	T,E
TH1	XS0030	Thermister	NTCCM16084LH223KC	T,E
VR1	RH0108	Trim. Pot	EVM1YSX50B15	
VR2	RH0104	Trim. Pot	EVM1YSX50BE4	
VR3	RH0106	Trim. Pot	EVM1YSX50BQ4	
VR4	RH0104	Trim. Pot	EVM1YSX50BE4	
X1	XK0003	Discriminator	CDBM450C7	
X2	XQ0081	Crystal	38CHT 21.25MHz	T,E
	SD0034	Spring	Earth Spring DR130	
Y1	TZ0049		Silicon Dumper	
Y2	TZ0049		Silicon Dumper	

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
		UHF MAIN Unit		
C201	CU3047	Chip C.	C1608JB1H103KT-A	
C202	CU9018	Chip C.	C3216JB1C105MT-N	
C203	CU9018	Chip C.	C3216JB1C105MT-N	
C204	CE0312	Electrolytic C.	ECEV1CA100R	
C205	CU3044	Chip C.	C1608JB1H562KT-A	
C206	CU3044	Chip C.	C1608JB1H562KT-A	
C207	CU8035	Chip C.	C2012B1E393K	
C208	CE0312	Electrolytic C.	ECEV1CA100R	
C209	CU8034	Chip C.	C2012X7R1E333K	
C210	CU3041	Chip C.	C1608JB1H332KT-A	
C211	CU3049	Chip C.	C1608JB1E153KT-A	
C212	CU8042	Chip C.	C2012JB1C104KT-A	
C213	CU3035	Chip C.	C1608JB1H102KT-A	
C214	CU3023	Chip C.	C1608CH1H101JT-A	
C215	CU3023	Chip C.	C1608CH1H101JT-A	
C216	CU3035	Chip C.	C1608JB1H102KT-A	
C217	CU3047	Chip C.	C1608JB1H103KT-A	
C218	CU8042	Chip C.	C2012JB1C104KT-A	
C219	CS0065	Chip Tantal	TMCSA1D684MTR	
C220	CU3047	Chip C.	C1608JB1H103KT-A	
C221	CU3051	Chip C.	C1608JB1E223KT-A	
C222	CE0312	Electrolytic C.	ECEV1CA100R	
C223	CU3059	Chip C.	C1608JF1E104ZTA	
C224	CU3022	Chip C.	C1608CH1H820JT-A	
C225	CU3059	Chip C.	C1608JF1E104ZTA	
C226	CU3059	Chip C.	C1608JF1E104ZTA	
C227	CU3010	Chip C.	C1608CH1H090CT-A	
C228	CU3007	Chip C.	C1608CH1H060CT-A	
C229	CU3018	Chip C.	C1608CH1H390JT-A	
C230	CU3005	Chip C.	C1608CH1H040CT-A	
C231	CU3011	Chip C.	C1608CH1H100CT-A	
C232	CU3035	Chip C.	C1608JB1H102KT-A	
C233	CU3035	Chip C.	C1608JB1H102KT-A	
C234	CU3035	Chip C.	C1608JB1H102KT-A	
C235	CU3035	Chip C.	C1608JB1H102KT-A	
C236	CU3004	Chip C.	C1608CH1H030CT-A	
C237	CU3035	Chip C.	C1608JB1H102KT-A	
C238	CU3015	Chip C.	C1608CH1H220JT-A	
C239	CU3035	Chip C.	C1608JB1H102KT-A	
C240	CU3011	Chip C.	C1608CH1H100CT-A	
C241	CU3035	Chip C.	C1608JB1H102KT-A	
C242	CU3035	Chip C.	C1608JB1H102KT-A	
C243	CU3035	Chip C.	C1608JB1H102KT-A	
C244	CU3035	Chip C.	C1608JB1H102KT-A	
C245	CU3035	Chip C.	C1608JB1H102KT-A	
C247	CU3011	Chip C.	C1608CH1H100CT-A	
C248	CU3004	Chip C.	C1608CH1H030CT-A	
C249	CU3035	Chip C.	C1608JB1H102KT-A	
C250	CU3035	Chip C.	C1608JB1H102KT-A	
C251	CU3035	Chip C.	C1608JB1H102KT-A	
C252	CU3004	Chip C.	C1608CH1H030CT-A	T,E,1
C252	CU3003	Chip C.	C1608CH1H020CT-A	2
C253	CE0315	Electrolytic C.	ECEV1CA470P#	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C255	CU3023	Chip C.	C1608CH1H101JT-A	
C256	CE0312	Electrolytic C.	ECEV1CA100R	
C257	CU3031	Chip C.	C1608JB1H471KT-A	
C258	CU3031	Chip C.	C1608JB1H471KT-A	
C259	CC5051	Ceramic C.	RCC05SL030C-L46AE	T
C259	CC5050	Ceramic C.	RCC05SL020C-L46AE	E
C259	CC5049	Ceramic C.	RCC05SL010C-L46AE	1,2
C260	CU3035	Chip C.	C1608JB1H102KT-A	
C262	CC5055	Ceramic C.	RCC05SL070C-L46AE	
C263	CU3002	Chip C.	C1608CH1H010CT-A	
C264	CU3003	Chip C.	C1608CH1H020CT-A	
C265	CC5058	Ceramic C.	DD05-979SL100D500	T,E,2
C265	CC5059	Ceramic C.	RCC05SL120J-L46AE	1
C266	CU3002	Chip C.	C1608CH1H010CT-A	
C267	CU3003	Chip C.	C1608CH1H020CT-A	
C268	CC5056	Ceramic C.	RCC05SL080D-L46AE	
C269	CC5055	Ceramic C.	RCC05SL070D-L46AE	T
C269	CC5056	Ceramic C.	RCC05SL080D-L46AE	E
C269	CC5057	Ceramic C.	RCC05SL090D-L46AE	1
C269	CC5054	Ceramic C.	RCC05SL060C-L46AE	2
C270	CC5054	Ceramic C.	RCC05SL060C-L46AE	
C271	CC5060	Ceramic C.	RCC05SL150J-L46AE	
C272	CC5073	Ceramic C.	RCC06SL560J-L46AU	
C273	CC5050	Ceramic C.	RCC05SL020C-L46AE	
C274	CU3004	Chip C.	C1608CH1H030CT-A	E
C275	CU3004	Chip C.	C1608CH1H030CT-A	E
C278	CU3035	Chip C.	C1608JB1H102KT-A	
C279	CU3035	Chip C.	C1608JB1H102KT-A	
C280	CU3035	Chip C.	C1608JB1H102KT-A	
C281	CU3002	Chip C.	C1608CH1H010CT-A	
C282	CU3035	Chip C.	C1608JB1H102KT-A	
C283	CU3035	Chip C.	C1608JB1H102KT-A	
C284	CU3023	Chip C.	C1608CH1H101JT-A	
C285	CU3035	Chip C.	C1608JB1H102KT-A	
C286	CU3035	Chip C.	C1608JB1H102KT-A	
C287	CU3064	Chip C.	C1608CH1H1R5CT-A	T,E
C287	CU3003	Chip C.	C1608CH1H020CT-A	1
C287	CU3002	Chip C.	C1608CH1H010CT-A	2
C288	CU3012	Chip C.	C1608CH1H120CT-A	
C289	CU3017	Chip C.	C1608CH1H330JT-A	1,2
C290	CU3035	Chip C.	C1608JB1H102KT-A	
C291	CU3035	Chip C.	C1608JB1H102KT-A	
C292	CU3035	Chip C.	C1608JB1H102KT-A	
C293	CU3035	Chip C.	C1608JB1H102KT-A	T,E
C293	CU3017	Chip C.	C1608CH1H330JT-A	1
C293	CU3011	Chip C.	C1608CH1H100CT-A	2
C294	CU3064	Chip C.	C1608CH1H1R5CT-A	
C295	CU3035	Chip C.	C1608JB1H102KT-A	
C296	CU3035	Chip C.	C1608JB1H102KT-A	
C297	CU3011	Chip C.	C1608CH1H100CT-A	
C298	CU3035	Chip C.	C1608JB1H102KT-A	
C300	CU3035	Chip C.	C1608JB1H102KT-A	E
C301	CU8042	Chip C.	C2012JB1C104KT-A	
C302	CU3051	Chip C.	C1608JB1E223KT-A	

Note: Version1=TE1, Version2=TE2

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C303	CU8034	Chip C.	C2012X7R1E333KT-A	
C304	CU7002	Chip C.	T1C2C31N2ACG030C	T,E,1
C305	CU3047	Chip C.	C1608JB1H103KT-A	
C306	CU3019	Chip C.	C1608CH1H470JT-A	
C307	CU8042	Chip C.	C2012JB1C104KT-A	
C308	CU3047	Chip C.	C1608JB1H103KT-A	
C309	CU3019	Chip C.	C1608CH1H470JT-A	
C310	CE0312	Electrolytic C.	ECEV1CA100R	
C311	CU3035	Chip C.	C1608JB1H102KT-A	
C312	CE0312	Electrolytic C.	ECEV1CA100R	
C313	CU3028	Chip C.	C1608CH1H271JT-A	
C314	CU3039	Chip C.	C1608JB1H222KT-A	
C315	CS0237	Chip Tantal	TMCMA1A475MTR	
C316	CU3035	Chip C.	C1608JB1H102KT-A	
C317	CU3035	Chip C.	C1608JB1H102KT-A	
C318	CU3035	Chip C.	C1608JB1H102KT-A	
C320	CU3035	Chip C.	C1608JB1H102KT-A	
C321	CE0315	Electrolytic C.	ECEV1CA 470P	
C322	CU3035	Chip C.	C1608JB1H102KT-A	
C323	CU3035	Chip C.	C1608JB1H102KT-A	
C324	CU3035	Chip C.	C1608JB1H102KT-A	
C328	CU3035	Chip C.	C1608JB1H102KT-A	
C329	CE0374	Electrolytic C.	16CV 100BS	
C330	CU3035	Chip C.	C1608JB1H102KT-A	
C331	CU3025	Chip C.	C1608CH1H151JT-A	T,E
C331	CU3019	Chip C.	C1608CH1H470JT-A	1,2
C332	CU3035	Chip C.	C1608JB1H102KT-A	
C333	CU3035	Chip C.	C1608JB1H102KT-A	
C334	CU3035	Chip C.	C1608JB1H102KT-A	
C335	CE0374	Electrolytic C.	16CV 100BS	
C336	CU3047	Chip C.	C1608JB1H103KT-A	
C337	CU3047	Chip C.	C1608JB1H103KT-A	
C338	CE0312	Electrolytic C.	ECEV1CA100R	
C339	CU3047	Chip C.	C1608JB1H103KT-A	
C340	CU3035	Chip C.	C1608JB1H102KT-A	
C341	CE0316	Electrolytic C.	ECEV1EA4R7R	
C342	CU3035	Chip C.	C1608JB1H102KT-A	
C343	CU3035	Chip C.	C1608JB1H102KT-A	
C344	CS0049	Chip Tantal	TMCSA1C105MTR	
C345	CS0061	Chip Tantal	TMCSA1V224MTR	1,2
C346	CU3035	Chip C.	C1608JB1H102KT-A	
C347	CU3035	Chip C.	C1608JB1H102KT-A	
C348	CU3035	Chip C.	C1608JB1H102KT-A	
C349	CS0049	Chip Tantal	TMCSA1C105MTR	
C350	CE0380	Electrolytic C.	CEDSM1C152M	
C351	CU3035	Chip C.	C1608JB1H102KT-A	
C352	CU3035	Chip C.	C1608JB1H102KT-A	
C353	CU3035	Chip C.	C1608JB1H102KT-A	
C354	CU3035	Chip C.	C1608JB1H102KT-A	
C355	CU3035	Chip C.	C1608JB1H102KT-A	
C356	CU3035	Chip C.	C1608JB1H102KT-A	
C357	CU3035	Chip C.	C1608JB1H102KT-A	
C358	CU3035	Chip C.	C1608JB1H102KT-A	
C359	CU3035	Chip C.	C1608JB1H102KT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C360	CS0328	Chip Tantal	ECST0JY685R	
C361	CU3035	Chip C.	C1608JB1H102KT-A	
C362	CU3002	Chip C.	C1608CH1H010CT-A	1,2
C363	CE0312	Electrolytic C.	ECEV1CA100R	
C364	CU3031	Chip C.	C1608JB1H471KT-A	
C365	CU3035	Chip C.	C1608JB1H102KT-A	
C366	CU3035	Chip C.	C1608JB1H102KT-A	
C368	CU3035	Chip C.	C1608JB1H102KT-A	
C369	CU3059	Chip C.	C1608JF1E104ZTA	
C370	CS0237	Chip Tantal	TMCMA1A475MTR	
C372	CU9018	Chip C.	C3216JB1C105MT-N	
C373	CU3035	Chip C.	C1608JB1H102KT-A	
C375	CU3035	Chip C.	C1608JB1H102KT-A	
C376	CU3035	Chip C.	C1608JB1H102KT-A	
C386	CU3035	Chip C.	C1608JB1H102KT-A	
C387	CS0216	Chip Tantal	TMCMB1A106MTR	
C389	CC5049	Ceramic C.	RCC05SL010C-L46AE	T,E,2
C389	CC5050	Ceramic C.	RCC05SL020C-L46AE	1
C390	CU3014	Chip C.	C1608CH1H180JT-A	T,E
C390	CU3019	Chip C.	C1608CH1H470JT-A	1,2
C391	CU3035	Chip C.	C1608JB1H102KT-A	
C392	CU3035	Chip C.	C1608JB1H102KT-A	
C393	CU3035	Chip C.	C1608JB1H102KT-A	
C394	CU3035	Chip C.	C1608JB1H102KT-A	
C396	CE0315	Electrolytic C.	ECEV1CA 470P	
C399	CU3035	Chip C.	C1608JB1H102KT-A	
C345	CS0063	Chip Tantal	TMCSA1V104MTR	T,E
CN201	UE0224	Connector	19PS-JE	
CN202	UE0228	Connector	28 5084 009 000 808	
CN203	UE0043	Connector	PI22A02M	
D201	XD0136	Diode	DTZ5.1A TT11	
D202	XD0250	Diode	MA742-TX	
D203	XD0141	Diode	1SV237 TE85R	
D204	XD0257	Diode	RN731V TE-17	E
D205	XD0254	Diode	1SS355 TE-17	
D206	XD0013	Diode	MI407	
D207	XD0301	Diode	1SV268	
D208	XD0250	Diode	MA742-TX	
D209	XD0250	Diode	MA742-TX	
D211	XD0230	Diode	DAN202U T106	
D212	XD0230	Diode	DAN202U T106	
D213	XD0230	Diode	DAN202U T106	
D214	XD0274	Diode	DSA3A1	
D215	XD0254	Diode	1SS355 TE-17	
D216	XD0254	Diode	1SS355 TE-17	
D217	XD0254	Diode	1SS355 TE-17	
FL201	XC0016	Filter	CFWS455E	
FL202	XF0014Z	Filter	30.850MHZ 30M15B9A	
IC201	XA0313	IC	M57788MR	T,E
IC201	XA0447	IC	M57788LR	1
IC201	XA0448	IC	M57788HR	2

Note: Version1=TE1, Version2=TE2

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Ref. No.	Parts No.	Description	Parts Name	Ver.
IC202	XA0343	IC	MC3372VM-EL	
IC203	XA0097	IC	NJM4558M T1	
IC205	XA0119	IC	AN8010M-(E1)	
IC206	XA0082	IC	MC7808CT	
JK201	UE0257	Connector	A30-30190-15	
JK202	UA0040A	Connector	R-B2.0*0.2Mplug15A	
L201	QC0061	Chip Coil	NL322522T-033J	
L202	QC0059	Chip Coil	NL322522T-022J	
L203	QC0059	Chip Coil	NL322522T-022J	
L204	QKA25D	Coil	MR3.0 2.5T 0.6	
L205	QKA15D	Coil	MR3.0 1.5T 0.6	
L206	QKA55E	Coil	MR3.0 5.5T 0.8	
L207	QKA95D	Coil	MR 3.0 9.5T 0.6	
L208	QKA25D	Coil	MR3.0 2.5T 0.6	
L209	QKA15E	Coil	MR3.0 1.5T 0.8	
L210	QKA15E	Coil	MR3.0 1.5T 0.8	
L211	QKA15E	Coil	MR3.0 1.5T 0.8	
L212	QKA15E	Coil	MR3.0 1.5T 0.8	
L213	QKA15E	Coil	MR3.0 1.5T 0.8	
L214	QKA12E	Coil	MR3.0 1.25T 0.8	E
L215	QKA12E	Coil	MR3.0 1.25T 0.8	E
L216	QC0398	Chip Coil	LQN1A15NJ04	
L217	QC0398	Chip Coil	LQN1A15NJ04	
L218	QA0113	Coil	KE-07319	T
L218	QA0114	Coil	KE-07320	E
L218	QA0128	Coil	QA0128	1
L218	QA0129	Coil	QA0129	2
L219	QA0113	Coil	KE-07319	T
L219	QA0114	Coil	KE-07320	E
L219	QA0128	Coil	QA0128	1
L219	QA0129	Coil	QA0129	2
L220	QC0060	Chip Coil	NL322522T-027J	T,E
L220	QC0059	Chip Coil	NL322522T-022J	1
L220	QC0057	Chip Coil	NL322522T-015J	2
L221	QC0062	Chip Coil	NL322522T-039J	
L222	QC0043	Chip Coil	NL322522T-2R2J	
L223	QC0048	Chip Coil	NL322522T-100J	
L227	QC0402	Chip Coil	LQN1A39NJ04	
Q201	XU0061	Transistor	UN5211-TX	
Q202	XT0095	Transistor	2SC4081T106R	
Q203	XT0095	Transistor	2SC4081T106R	
Q204	XT0095	Transistor	2SC4081T106R	
Q205	XU0174	Transistor	UN5112-TX	
Q206	XT0095	Transistor	2SC4081T106R	
Q207	XT0125	Transistor	2SC4245Y(TE85L)	
Q208	XT0146	Transistor	2SC5226-4-TL	
Q209	XT0048	Transistor	2SC3357T1 RE	
Q210	XT0084	Transistor	2SC2954-T1	
Q211	XE0013	FET	3SK184STX	
Q212	XE0022	FET	2SK1577	
Q213	XE0013	FET	3SK184STX	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q214	XT0125	Transistor	2SC4245Y(TE85L)	
Q216	XU0160	Transistor	DTC363EKT146	
Q217	XU0061	Transistor	UN5211-TX	
Q218	XT0061	Transistor	2SB1132T100Q	
Q219	XT0061	Transistor	2SB1132T100Q	
Q220	XU0061	Transistor	UN5211-TX	
Q221	XU0180	Transistor	UN5213-TX	
Q222	XU0061	Transistor	UN5211-TX	
Q223	XU0028	Transistor	FMC2	E
Q224	XU0054	Transistor	XN1213-TX	E
Q225	XU0046	Transistor	XN111M-TX	E
Q226	XU0061	Transistor	UN5211-TX	
Q227	XT0112	Transistor	2SB1292F	
Q228	XT0037	Transistor	2SC2412KT146R	
Q229	XT0094	Transistor	2SA1576T106R	
Q230	XT0126	Transistor	2SB1302S-TD	
Q231	XT0095	Transistor	2SC4081T106R	
Q233	XU0160	Transistor	DTC363EKT146	
Q234	XU0180	Transistor	UN5213-TX	
Q235	XT0095	Transistor	2SC4081T106R	
R201	RK3055	Chip R.	ERJ3GSYJ273V	
R202	RK3060	Chip R.	ERJ3GSYJ683V	
R203	RK3058	Chip R.	ERJ3GSYJ473V	
R204	RK3038	Chip R.	ERJ3GSYJ102V	
R205	RK3038	Chip R.	ERJ3GSYJ102V	
R206	RK3042	Chip R.	ERJ3GSYJ222V	
R207	RK3058	Chip R.	ERJ3GSYJ473V	
R208	RK3071	Chip R.	ERJ3GSYJ564V	
R209	RK3034	Chip R.	ERJ3GSYJ471V	
R210	RK3054	Chip R.	ERJ3GSYJ223V	
R211	RK3033	Chip R.	ERJ3GSYJ391V	
R212	RK3042	Chip R.	ERJ3GSYJ222V	
R213	RK3068	Chip R.	ERJ3GSYJ334V	
R214	RK3026	Chip R.	ERJ3GSYJ101V	
R215	RK3050	Chip R.	ERJ3GSYJ103V	
R216	RK3030	Chip R.	ERJ3GSYJ221V	
R217	RK3042	Chip R.	ERJ3GSYJ222V	
R218	RK3041	Chip R.	ERJ3GSYJ182V	
R219	RK3058	Chip R.	ERJ3GSYJ473V	
R220	RK3050	Chip R.	ERJ3GSYJ103V	
R221	RK3057	Chip R.	ERJ3GSYJ393V	
R222	RK3054	Chip R.	ERJ3GSYJ223V	
R223	RK3050	Chip R.	ERJ3GSYJ103V	
R224	RK3050	Chip R.	ERJ3GSYJ103V	
R225	RK3038	Chip R.	ERJ3GSYJ102V	
R226	RK3046	Chip R.	ERJ3GSYJ472V	
R227	RK3066	Chip R.	ERJ3GSYJ224V	
R228	RK3050	Chip R.	ERJ3GSYJ103V	
R229	RK3056	Chip R.	ERJ3GSYJ333V	
R230	RK3038	Chip R.	ERJ3GSYJ102V	
R231	RK3043	Chip R.	ERJ3GSYJ272V	
R232	RK3038	Chip R.	ERJ3GSYJ102V	
R233	RK3056	Chip R.	ERJ3GSYJ333V	

Note: Version1=TE1, Version2=TE2

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Ref. No.	Parts No.	Description	Parts Name	Ver.
R234	RK3038	Chip R.	ERJ3GSYJ102V	
R235	RK3062	Chip R.	ERJ3GSYJ104V	
R236	RK3042	Chip R.	ERJ3GSYJ222V	
R237	RK3050	Chip R.	ERJ3GSYJ103V	
R238	RK3030	Chip R.	ERJ3GSYJ221V	
R239	RK3042	Chip R.	ERJ3GSYJ222V	
R240	RK3042	Chip R.	ERJ3GSYJ222V	
R241	RK3042	Chip R.	ERJ3GSYJ222V	
R242	RK3044	Chip R.	ERJ3GSYJ332V	
R243	RK3050	Chip R.	ERJ3GSYJ103V	
R244	RK3038	Chip R.	ERJ3GSYJ102V	
R245	RK3001	Chip R.	ERJ3GSY0R00V	
R246	RK3022	Chip R.	ERJ3GSYJ470V	
R247	RK3050	Chip R.	ERJ3GSYJ103V	
R248	RK3038	Chip R.	ERJ3GSYJ102V	
R250	RK3036	Chip R.	ERJ3GSYJ681V	
R251	RK3030	Chip R.	ERJ3GSYJ221V	
R252	RK3034	Chip R.	ERJ3GSYJ471V	
R253	RK0107	Chip R.	ERJ6GEY0R00V	
R254	RK4018	Chip R.	ERJ-12YJ220V	
R255	RK4026	Chip R.	ERJ-12YJ101V	
R256	RK0044	Chip R.	ERJ6GEYJ392V	
R257	RK0128	Chip R.	ERJ6GEYJ5R6V	
R258	RK0044	Chip R.	ERJ6GEYJ392V	
R259	RK0107	Chip R.	ERJ6GEY0R00V	
R260	RK3058	Chip R.	ERJ3GSYJ473V	
R261	RK3042	Chip R.	ERJ3GSYJ222V	
R262	RK3042	Chip R.	ERJ3GSYJ222V	
R263	RD0069U	Carbon R.	ERDSTJ104A	T
R264	RK3056	Chip R.	ERJ3GSYJ333V	
R265	RK3026	Chip R.	ERJ3GSYJ101V	
R266	RK3026	Chip R.	ERJ3GSYJ101V	
R267	RK3001	Chip R.	ERJ3GSY0R00V	T,E
R267	RK3026	Chip R.	ERJ3GSYJ101V	1,2
R268	RK3018	Chip R.	ERJ3GSYJ220V	
R272	RK3054	Chip R.	ERJ3GSYJ223V	
R273	RK3038	Chip R.	ERJ3GSYJ102V	
R274	RK3001	Chip R.	ERJ3GSY0R00V	
R275	RK3026	Chip R.	ERJ3GSYJ101V	
R276	RK3032	Chip R.	ERJ3GSYJ331V	
R277	RK3022	Chip R.	ERJ3GSYJ470V	
R278	RK3036	Chip R.	ERJ3GSYJ681V	
R279	RK3070	Chip R.	ERJ3GSYJ474V	
R280	RK3030	Chip R.	ERJ3GSYJ221V	
R281	RK3026	Chip R.	ERJ3GSYJ101V	
R282	RK3058	Chip R.	ERJ3GSYJ473V	
R283	RK3063	Chip R.	ERJ3GSYJ124V	
R284	RK3052	Chip R.	ERJ3GSYJ153V	
R285	RK3054	Chip R.	ERJ3GSYJ223V	
R286	RK3062	Chip R.	ERJ3GSYJ104V	E,1,2
R287	RK3001	Chip R.	ERJ3GSY0R00V	
R288	RK3038	Chip R.	ERJ3GSYJ102V	
R289	RK3069	Chip R.	ERJ3GSYJ394V	
R290	RK3042	Chip R.	ERJ3GSYJ222V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R291	RK3062	Chip R.	ERJ3GSYJ104V	
R292	RK3050	Chip R.	ERJ3GSYJ103V	
R293	RK3026	Chip R.	ERJ3GSYJ101V	
R294	RK3051	Chip R.	ERJ3GSYJ123V	
R295	RK3050	Chip R.	ERJ3GSYJ103V	
R296	RK3060	Chip R.	ERJ3GSYJ683V	
R297	RK3060	Chip R.	ERJ3GSYJ683V	
R298	RK3026	Chip R.	ERJ3GSYJ101V	
R299	RK3050	Chip R.	ERJ3GSYJ103V	
R300	RK3046	Chip R.	ERJ3GSYJ472V	
R301	RK3001	Chip R.	ERJ3GSY0R00V	
R302	RK3070	Chip R.	ERJ3GSYJ474V	
R303	RK3042	Chip R.	ERJ3GSYJ222V	
R304	RK3050	Chip R.	ERJ3GSYJ103V	
R305	RK3001	Chip R.	ERJ3GSY0R00V	
R306	RK3050	Chip R.	ERJ3GSYJ103V	T,E
R306	RK3046	Chip R.	ERJ3GSYJ472V	1,2
R308	RK3054	Chip R.	ERJ3GSYJ223V	
R309	RK3046	Chip R.	ERJ3GSYJ472V	
R310	RK3050	Chip R.	ERJ3GSYJ103V	
R311	RK3041	Chip R.	ERJ3GSYJ182V	
R312	RK3038	Chip R.	ERJ3GSYJ102V	
R313	RK3042	Chip R.	ERJ3GSYJ222V	
R314	RK3001	Chip R.	ERJ3GSY0R00V	
R315	RK3001	Chip R.	ERJ3GSY0R00V	T,1,2
R316	RK3054	Chip R.	ERJ3GSYJ223V	
R317	RK3054	Chip R.	ERJ3GSYJ223V	
R318	RK3043	Chip R.	ERJ3GSYJ272V	T,E
R318	RK3045	Chip R.	ERJ3GSYJ392V	1,2
R319	RK3034	Chip R.	ERJ3GSYJ471V	
R320	RK3054	Chip R.	ERJ3GSYJ223V	
R321	RK3050	Chip R.	ERJ3GSYJ103V	
R322	RK4034	Chip R.	ERJ-12YJ471V	
R323	RK3050	Chip R.	ERJ3GSYJ103V	
R326	RK3053	Chip R.	ERJ3GSYJ183V	
R327	RK3043	Chip R.	ERJ3GSYJ272V	T,E
R327	RK3042	Chip R.	ERJ3GSYJ222V	1,2
R328	RK3026	Chip R.	ERJ3GSYJ101V	
R329	RK3050	Chip R.	ERJ3GSYJ103V	
R330	RK3050	Chip R.	ERJ3GSYJ103V	
R331	RK3050	Chip R.	ERJ3GSYJ103V	
R332	RK4034	Chip R.	ERJ-12YJ471V	
R333	RK3001	Chip R.	ERJ3GSY0R00V	
R334	RK3018	Chip R.	ERJ3GSYJ220V	
R336	RK3038	Chip R.	ERJ3GSYJ102V	
R337	RK3018	Chip R.	ERJ3GSYJ220V	
R338	RK3058	Chip R.	ERJ3GSYJ473V	
R339	RK3026	Chip R.	ERJ3GSYJ101V	
R340	RK3038	Chip R.	ERJ3GSYJ102V	
R341	RK3038	Chip R.	ERJ3GSYJ102V	
R342	RK3038	Chip R.	ERJ3GSYJ102V	
R351	RK3058	Chip R.	ERJ3GSYJ473V	
R353	RK3054	Chip R.	ERJ3GSYJ223V	T,E
R353	RK3038	Chip R.	ERJ3GSYJ102V	1,2

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
R354	RK3058	Chip R.	ERJ3GSYJ473V	
R355	RK3050	Chip R.	ERJ3GSYJ103V	
R357	RK1107	Chip R.	ERJ8GEY0R00V	T,1,2
R358	RK3050	Chip R.	ERJ3GSYJ103V	
R359	RK3001	Chip R.	ERJ3GSY0R00V	
R361	RK3001	Chip R.	ERJ3GSY0R00V	E
R363	RK3001	Chip R.	ERJ3GSY0R00V	E
R366	RK3001	Chip R.	ERJ3GSY0R00V	
R367	RK3026	Chip R.	ERJ3GSYJ101V	
R368	RK3048	Chip R.	ERJ3GSYJ682V	T,E
R368	RK3046	Chip R.	ERJ3GSYJ472V	1,2
R369	RK3022	Chip R.	ERJ3GSYJ470V	
R370	RK1107	Chip R.	ERJ8GEY0R00V	1,2
TC201	CT0012	Trim. C	CTZ10AW	
TC202	CT0012	Trim. C	CTZ10AW	
TH201	XS0031	Thermister	NTCCM16084BH682KC	
TH202	XS0031	Thermister	NTCCM16084BH682KC	
VR201	RH0104	Trim. Pot	EXM1YSX50BE4	
VR202	RH0108	Trim. Pot	EXM1YSX50B15	
VR203	RH0104	Trim. Pot	EXM1YSX50BE4	
VR204	RH0106	Trim. Pot	EXM1YSX50BQ4	
VR205	RH0106	Trim. Pot	EXM1YSX50BQ4	
X201	XK0002	Discriminator	CDBM455C7	
X202	XQ0058A	Crystal	UM-5 30.395MHz	
	SD0034	Spring	Earth Spring DR130	
Y201	TZ0049		Silicon Dumper	
Y202	TZ0049		Silicon Dumper	

Ref. No.	Parts No.	Description	Parts Name	Ver.
FRONT CPU Unit				
C401	CU3035	Chip C.	C1608JB1H102KT-A	
C402	CU3035	Chip C.	C1608JB1H102KT-A	
C403	CU3035	Chip C.	C1608JB1H102KT-A	
C404	CU8040	Chip C.	C2012JB1E473KT	
C405	CU3035	Chip C.	C1608JB1H102KT-A	
C406	CS0237	ChipTantal	TMCMA1A475MTR	
C407	CU9018	Chip C.	C3216JB1C105MT-N	
C408	CU3035	Chip C.	C1608JB1H102KT-A	
C409	CU3035	Chip C.	C1608JB1H102KT-A	
C410	CE0374	Electrolytic C.	16CV 100BS	
C411	CU3035	Chip C.	C1608JB1H102KT-A	
C412	CU3042	Chip C.	C1608JB1H392KT-A	
C413	CU3059	Chip C.	C1608JF1E104ZTA	
C414	CU8042	Chip C.	C2012JB1C104KT-A	
C415	CU3047	Chip C.	C1608JB1H103KT-A	
C416	CU3047	Chip C.	C1608JB1H103KT-A	
C417	CU3014	Chip C.	C1608CH1H180JT-A	
C418	CU3014	Chip C.	C1608CH1H180JT-A	
C419	CU3047	Chip C.	C1608JB1H103KT-A	
C420	CS0367	ChipTantal	TMCMA0J106MTR	
C421	CU3035	Chip C.	C1608JB1H102KT-A	
C422	CE0372	ChipTantal	TMCMB1C106MTR	
C423	CU3051	Chip C.	C1608JB1E223KT-A	
C424	CU8032	Chip C.	C2012B1E223K	
C425	CU8032	Chip C.	C2012B1E223K	
C426	CE0372	ChipTantal	TMCMB1C106MTR	
C427	CU3023	Chip C.	C1608CH1H101JT-A	
C428	CU3023	Chip C.	C1608CH1H101JT-A	
C429	CU3035	Chip C.	C1608JB1H102KT-A	
C430	CU3035	Chip C.	C1608JB1H102KT-A	
C431	CU3023	Chip C.	C1608CH1H101JT-A	
C432	CU3023	Chip C.	C1608CH1H101JT-A	
C433	CU3035	Chip C.	C1608JB1H102KT-A	
C434	CU3035	Chip C.	C1608JB1H102KT-A	
C435	CU3035	Chip C.	C1608JB1H102KT-A	
C436	CU3023	Chip C.	C1608CH1H101JT-A	
C437	CU3023	Chip C.	C1608CH1H101JT-A	
C439	CU3023	Chip C.	C1608CH1H101JT-A	
C440	CU3035	Chip C.	C1608JB1H102KT-A	
C441	CU3035	Chip C.	C1608JB1H102KT-A	
C442	CU3023	Chip C.	C1608CH1H101JT-A	
C443	CU3023	Chip C.	C1608CH1H101JT-A	
C444	CU3023	Chip C.	C1608CH1H101JT-A	
C445	CU3035	Chip C.	C1608JB1H102KT-A	
C446	CU3035	Chip C.	C1608JB1H102KT-A	
C447	CU3035	Chip C.	C1608JB1H102KT-A	
C448	CU3047	Chip C.	C1608JB1H103KT-A	
C449	CU3059	Chip C.	C1608JF1E104ZTA	
C450	CU3035	Chip C.	C1608JB1H102KT-A	
C451	CU3035	Chip C.	C1608JB1H102KT-A	
C452	CS0049	ChipTantal	TMCSA1C105MTR	

Note: Version1=TE1, Version2=TE2

FRONT CPU Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
CN401	UJ0035	Connector	HJC0272-010022	
CN402	UE0173	Connector	B12B-ZR	
CN403	UE0291	Connector	17R-JE	
CN404	UE0225	Connector	19R-JE	
CN405	UE0292	Connector	B07B-ZR	1,2
D401	XL0039	Chip LED	LT1EP53A	
D402	XL0039	Chip LED	LT1EP53A	
D403	XD0291	Diode	MA729-TX	
D404	XD0291	Diode	MA729-TX	
D405	XA0250	Diode	MA742 TX	
D406	XD0254	Diode	1SS355 TE17	
D407	XD0255	Diode	MA8110H-TX	
D408	XD0187	Diode	DTZ11B TT11	
D409	XD0230	Diode	DAN202U T106	1,2
EL401	EL0031	LCD	HLC8792-012300	
IC401	XA0420	IC	M38267M8L-107FP	
IC402	XA0368	IC	AT24C16N-10SI-2.7	
IC403	XA0309	IC	RN5VL25AA-T1	
IC404	XA0238	IC	AN78L05M-E1	
IC405	XA0315	IC	RH5VA50AA	
JP401	MACL02AA	Wire	Wire #02 Blue	T
JP402	MPAL05AA	Wire	#30P02-050-02	1,2
JP403	MPAL05AA	Wire	#30P02-050-02	1,2
JP404	MRAL02AA	Wire	Wire #02 Red	1,2
LMP401	EP0003	Lightbulb	BQ031-30403A	
LMP402	EP0003	Lightbulb	BQ031-30403A	
Q401	XT0095	Transistor	2SC4081T106R	
Q402	XU0178	Transistor	XP1215	
Q403	XU0178	Transistor	XP1215	
Q404	XU0061	Transistor	UN5211-TX (T)	1,2
Q405	XT0113	Transistor	2SC2837Y TE12L	
Q406	XU0179	Transistor	UN5114-TX	
Q407	XU0061	Transistor	UN5211-TX	
R401	RK3060	Chip R.	ERJ3GSYJ683V	
R402	RK3056	Chip R.	ERJ3GSYJ333V	
R403	RK3026	Chip R.	ERJ3GSYJ101V	
R404	RK3072	Chip R.	ERJ3GSYJ684V	
R405	RK3043	Chip R.	ERJ3GSYJ272V	
R406	RK3026	Chip R.	ERJ3GSYJ101V	T,E
R406	RK3030	Chip R.	ERJ3GSYJ221V	1,2
R407	RK3001	Chip R.	ERJ3GSY0R00V	T,E
R408	RK3057	Chip R.	ERJ3GSYJ393V	
R409	RK3057	Chip R.	ERJ3GSYJ393V	
R410	RK3060	Chip R.	ERJ3GSYJ683V	
R411	RK3056	Chip R.	ERJ3GSYJ333V	
R412	RK3046	Chip R.	ERJ3GSYJ472V	E
R413	RK3058	Chip R.	ERJ3GSYJ473V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R414	RK3060	Chip R.	ERJ3GSYJ683V	T,E
R415	RK3057	Chip R.	ERJ3GSYJ393V	
R416	RK3057	Chip R.	ERJ3GSYJ393V	
R417	RK3060	Chip R.	ERJ3GSYJ683V	E
R419	RK3001	Chip R.	ERJ3GSY0R00V	E
R420	RK3001	Chip R.	ERJ3GSY0R00V	E
R421	RK3038	Chip R.	ERJ3GSYJ102V	
R422	RK3046	Chip R.	ERJ3GSYJ472V	
R423	RK3046	Chip R.	ERJ3GSYJ472V	
R424	RK3046	Chip R.	ERJ3GSYJ472V	
R425	RA0008	Chip R.	EXBV4V102JV	
R426	RA0008	Chip R.	EXBV4V102JV	
R427	RA0009	Chip R.	EXBV8V102JV	
R428	RK3038	Chip R.	ERJ3GSYJ102V	
R429	RK3038	Chip R.	ERJ3GSYJ102V	
R430	RA0008	Chip R.	EXBV4V102JV	
R431	RK3057	Chip R.	ERJ3GSYJ393V	
R432	RK3038	Chip R.	ERJ3GSYJ102V	T,E
R432	RK3054	Chip R.	ERJ3GSYJ223V	1,2
R433	RK3038	Chip R.	ERJ3GSYJ102V	
R434	RK3050	Chip R.	ERJ3GSYJ103V	
R435	RA0009	Chip R.	EXBV8V102JV	
R436	RA0009	Chip R.	EXBV8V102JV	
R437	RK3043	Chip R.	ERJ3GSYJ272V	
R438	RK3074	Chip R.	ERJ3GSYJ105V	
R439	RK3058	Chip R.	ERJ3GSYJ473V	
R440	RK3050	Chip R.	ERJ3GSYJ103V	
R441	RK3038	Chip R.	ERJ3GSYJ102V	
R442	RK3058	Chip R.	ERJ3GSYJ473V	
R443	RK3070	Chip R.	ERJ3GSYJ474V	
R444	RK3058	Chip R.	ERJ3GSYJ473V	
R445	RK3070	Chip R.	ERJ3GSYJ474V	
R446	RK0005	Chip R.	ERJ6GEYJ220V	
R447	RK3034	Chip R.	ERJ3GSYJ471V	
R448	RK3034	Chip R.	ERJ3GSYJ471V	
R449	RK3034	Chip R.	ERJ3GSYJ471V	
R450	RK3034	Chip R.	ERJ3GSYJ471V	
R451	RK3034	Chip R.	ERJ3GSYJ471V	
R452	RK3050	Chip R.	ERJ3GSYJ103V	
R453	RK3050	Chip R.	ERJ3GSYJ103V	
R454	RK3046	Chip R.	ERJ3GSYJ472V	
R455	RK3046	Chip R.	ERJ3GSYJ472V	
R456	RK3042	Chip R.	ERJ3GSYJ222V	
R457	RK3058	Chip R.	ERJ3GSYJ473V	
R458	RK3001	Chip R.	ERJ3GSY0R00V	
R459	RK3001	Chip R.	ERJ3GSY0R00V	
R460	RK3001	Chip R.	ERJ3GSY0R00V	
R461	RK3038	Chip R.	ERJ3GSYJ102V	
R462	RK3050	Chip R.	ERJ3GSYJ103V	
R463	RK3062	Chip R.	ERJ3GSYJ104V	
R464	RK3046	Chip R.	ERJ3GSYJ472V	
R465	RK3050	Chip R.	ERJ3GSYJ103V	
R467	RA0008	Chip R.	EXBV4V102JV	
R468	RK3038	Chip R.	ERJ3GSYJ102V	

Note: Version1=TE1, Version2=TE2

FRONT CPU Unit / VHF VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R469	RK3058	Chip R.	ERJ3GSYJ473V	
R470	RK3058	Chip R.	ERJ3GSYJ473V	
R471	RK3058	Chip R.	ERJ3GSYJ473V	
R472	RK3058	Chip R.	ERJ3GSYJ473V	
R473	RK3058	Chip R.	ERJ3GSYJ473V	1,2
R474	RK3058	Chip R.	ERJ3GSYJ473V	
R475	RK3058	Chip R.	ERJ3GSYJ473V	
R476	RK3058	Chip R.	ERJ3GSYJ473V	
R477	RK3058	Chip R.	ERJ3GSYJ473V	
R478	RK3058	Chip R.	ERJ3GSYJ473V	
R479	RK3058	Chip R.	ERJ3GSYJ473V	
R481	RK3001	Chip R.	ERJ3GSY0R00V	T,E
R482	RK3038	Chip R.	ERJ3GSYJ102V	
R483	RK3058	Chip R.	ERJ3GSYJ473V	
R484	RK3058	Chip R.	ERJ3GSYJ473V	
R485	RK3058	Chip R.	ERJ3GSYJ473V	
R486	RK3038	Chip R.	ERJ3GSYJ102V	E
R487	RK0107	Chip R.	ERJ6GSY0R00V	T
RE401	UR0015	Rotary Encoder	RH90N74E20 20F	
SW401	UU0017	Switch	SKQD-AA	
SW402	UU0023	Switch	SKQMAH	
SW403	UU0023	Switch	SKQMAH	
SW404	UU0023	Switch	SKQMAH	
SW405	UU0023	Switch	SKQMAH	
SW406	UU0023	Switch	SKQMAH	
SW407	UQ0011	Switch	ESB-64801	
SW408	UU0023	Switch	SKQMAH	1,2
VR401	RV0032	Trim. Pot	RH96N74 15F A10K	
VR402	RV0032	Trim. Pot	RH96N74 15F A10K	
X401	XQ0084	Crystal	38C 4.19MHz	
	ST0058Z		LCD Holder	
	DH0011		Diffusion Sheet DR605T	
	DH0012		Reflection Sheet DR605T	
	FG0217		LCD Rubber Connector	
	DG0025Z		LCD Light DR605T	
	TT1001		Tube 0.7mm	

Ref. No.	Parts No.	Description	Parts Name	Ver.
VHF VCO Unit				
C501	CU3035	Chip C.	C1608JB1H102KT-A	
C502	CU3035	Chip C.	C1608JB1H102KT-A	
C503	CU3035	Chip C.	C1608JB1H102KT-A	
C504	CU3035	Chip C.	C1608JB1H102KT-A	
C505	CU3035	Chip C.	C1608JB1H102KT-A	
C506	CS0063	Chip Tantal	TMCSA1V104MTR	
C507	CU3035	Chip C.	C1608JB1H102KT-A	
C508	CU3002	Chip C.	C1608CH1H010CT-A	
C509	CU3027	Chip C.	C1608CH1H221KT-A	
C510	CU3011	Chip C.	C1608CH1H100CT-A	T,E
C510	CU3009	Chip C.	C1608CH1H080CT-A	1,2
C511	CU3009	Chip C.	C1608CH1H080CT-A	
C512	CU3064	Chip C.	C1608CH1H1R5CT-A	
C513	CU3035	Chip C.	C1608JB1H102KT-A	
C514	CU3015	Chip C.	C1608CH1H220JT-A	
C515	CU3035	Chip C.	C1608JB1H102KT-A	
C516	CU3035	Chip C.	C1608JB1H102KT-A	
C518	CU3064	Chip C.	C1608CH1H1R5CT-A	
C519	CU3047	Chip C.	C1608JB1H103KT-A	
C520	CU3051	Chip C.	C1608JB1E223KT-A	
C521	CS0220	Chip Tantal	TMCMA1C225MTR	
C522	CS0220	Chip Tantal	TMCMA1C225MTR	
C525	CU3035	Chip C.	C1608JB1H102KT-A	
C526	CU3035	Chip C.	C1608JB1H102KT-A	
C527	CU3023	Chip C.	C1608CH1H101JT-A	
C528	CU3023	Chip C.	C1608CH1H101JT-A	
C529	CU3023	Chip C.	C1608CH1H101JT-A	
C530	CU3047	Chip C.	C1608JB1H103KT-A	
C531	CU3008	Chip C.	C1608CH1H070CT-A	
C532	CU3035	Chip C.	C1608JB1H102KT-A	
C533	CU3011	Chip C.	C1608CH1H100CT-A	
C534	CS0216	Chip Tantal	TMCMB1A106MTR	
C535	CU3035	Chip C.	C1608JB1H102KT-A	1,2
C537	CU3035	Chip C.	C1608JB1H102KT-A	
CN501	UE0295	Connector	B7P-BC-2	
CN502	UE0188	Connector	B9P-BC-2	T,E
CN502	UE0304	Connector	B8(9-7)P-BC-2	1,2
D501	XD0272	Diode	1SS356 TW11	
D502	XD0300	Diode	1SV262 TPH2	
D503	XD0300	Diode	1SV262 TPH2	
D504	XD0131	Diode	1SV214 TPH4	
IC501	XA0352	IC	M64076GP	
L501	QC0442	Chip Coil	MLF1608A1R0KT	
L502	QC0106	Chip Coil	LER015T2R2M	
L503	QC0103	Chip Coil	LER015T1R2M	
L504	QC0106	Chip Coil	LER015T2R2M	
L505	QA0127	Chip Coil	VCO coil 5CBM	
L506	QC0430	Chip Coil	MLF1608DR10KT	
L507	QC0103	Chip Coil	LER015T1R2M	

Note: Version1=TE1, Version2=TE2

VHF VCO Unit / UHF VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q501	XU0061	Transistor	UN5211-TX	
Q502	XE0010	FET	2SK508K52-T2B	
Q503	XT0124	Transistor	2SC4215-Y(TE85L)	
Q504	XU0061	Transistor	UN5211-TX	
Q505	XT0124	Transistor	2SC4215-Y(TE85L)	
R501	RK3050	Chip R.	ERJ3GSYJ103V	
R502	RK3060	Chip R.	ERJ3GSYJ683V	
R503	RK3022	Chip R.	ERJ3GSYJ470V	
R504	RK3058	Chip R.	ERJ3GSYJ473V	
R505	RK3042	Chip R.	ERJ3GSYJ222V	
R506	RK3042	Chip R.	ERJ3GSYJ222V	
R507	RK3054	Chip R.	ERJ3GSYJ223V	T,E
R507	RK3052	Chip R.	ERJ3GSYJ153V	1,2
R508	RK3024	Chip R.	ERJ3GSYJ680V	
R509	RK3018	Chip R.	ERJ3GSYJ220V	
R510	RK3042	Chip R.	ERJ3GSYJ222V	
R511	RK3046	Chip R.	ERJ3GSYJ472V	
R512	RK3026	Chip R.	ERJ3GSYJ101V	
R513	RK3034	Chip R.	ERJ3GSYJ471V	
R514	RK3001	Chip R.	ERJ3GSY0R00V	
R515	RK3050	Chip R.	ERJ3GSYJ103V	
R518	RK3054	Chip R.	ERJ3GSYJ223V	
R517	RK3030	Chip R.	ERJ3GSYJ221V	
R518	RK3047	Chip R.	ERJ3GSYJ562V	
R520	RK3054	Chip R.	ERJ3GSYJ223V	
R521	RK3034	Chip R.	ERJ3GSYJ471V	
R522	RK3043	Chip R.	ERJ3GSYJ272V	
R523	RK3026	Chip R.	ERJ3GSYJ101V	
R524	RK3038	Chip R.	ERJ3GSYJ102V	
R525	RK3038	Chip R.	ERJ3GSYJ102V	
	TS0116Z	VCO Case	VCO Case DR605	

Ref. No.	Parts No.	Description	Parts Name	Ver.
UHF VCO Unit				
C601	CU3035	Chip C.	C1608JB1H102KT-A	
C602	CU3003	Chip C.	C1608CH1H020CT-A	T,E,1
C602	CU3064	Chip C.	C1608CH1H1R5CT-A	2
C603	CS0216	Chip Tantal	TMCMB1A106MTR	
C604	CU3035	Chip C.	C1608JB1H102KT-A	
C606	CS0063	Chip Tantal	TMCSA1V104MTR	
C607	CU3035	Chip C.	C1608JB1H102KT-A	
C608	CU3019	Chip C.	C1608CH1H470JT-A	
C609	CU3008	Chip C.	C1608CH1H070CT-A	T,E
C609	CU3009	Chip C.	C1608CH1H080CT-A	1
C609	CU3006	Chip C.	C1608CH1H050CT-A	2
C610	CU3006	Chip C.	C1608CH1H050CT-A	T,E
C610	CU3008	Chip C.	C1608CH1H070CT-A	1,2
C611	CU3002	Chip C.	C1608CH1H010CT-A	
C612	CU3035	Chip C.	C1608JB1H102KT-A	
C613	CU3011	Chip C.	C1608CH1H100CT-A	
C614	CU3047	Chip C.	C1608JB1H103KT-A	
C615	CU3035	Chip C.	C1608JB1H102KT-A	
C616	CU3051	Chip C.	C1608JB1E223KT-A	
C617	CS0220	Chip Tantal	TMCMA1C225MTR	
C618	CS0220	Chip Tantal	TMCMA1C225MTR	
C620	CU3035	Chip C.	C1608JB1H102KT-A	
C621	CU3035	Chip C.	C1608JB1H102KT-A	
C622	CU3023	Chip C.	C1608CH1H101JT-A	
C623	CU3023	Chip C.	C1608CH1H101JT-A	
C624	CU3023	Chip C.	C1608CH1H101JT-A	
C625	CU3047	Chip C.	C1608JB1H103KT-A	
C626	CU3006	Chip C.	C1608CH1H050CT-A	
C627	CU3035	Chip C.	C1608JB1H102KT-A	
C628	CU3003	Chip C.	C1608CH1H020CT-A	
C632	CU3031	Chip C.	C1608JB1H471KT-A	
C633	CU3035	Chip C.	C1608JB1H102KT-A	
CN601	UE0295	Connector	B7P-BC-2	
CN602	UE0188	Connector	B9P-BC-2	
D601	XD0131	Diode	1SV214 TPH4	
D602	XD0131	Diode	1SV214 TPH4	
D603	XD0131	Diode	1SV214 TPH4	
IC601	XA0352	IC	M64076GP	
L601	QC0101	Chip Coil	LER015TR82M	
L602	QC0101	Chip Coil	LER015TR82M	
L603	QC0101	Chip Coil	LER015TR82M	
L604	QC0096	Chip Coil	LER015TR33M	
L605	QC0430	Chip Coil	MLF1608DR10KT	
L606	QA0093	Chip Coil	KS12-275-1	

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q601	XE0010	FET	FET 2SK508K52-T2B	
Q602	XT0125	Transistor	2SC4245-Y(TE85L)	
Q604	XT0124	Transistor	2SC4215-Y(TE85L)	
R601	RK3062	Chip R.	ERJ3GSYJ104V	
R602	RK3060	Chip R.	ERJ3GSYJ683V	
R603	RK3022	Chip R.	ERJ3GSYJ470V	
R604	RK3030	Chip R.	ERJ3GSYJ221V	
R605	RK3021	Chip R.	ERJ3GSYJ390V	
R606	RK3022	Chip R.	ERJ3GSYJ470V	
R607	RK3045	Chip R.	ERJ3GSYJ392V	
R608	RK3050	Chip R.	ERJ3GSYJ103V	
R609	RK3054	Chip R.	ERJ3GSYJ223V	
R610	RK3030	Chip R.	ERJ3GSYJ221V	
R611	RK3054	Chip R.	ERJ3GSYJ223V	T,E
R611	RK3053	Chip R.	ERJ3GSYJ183V	1,2
R612	RK3001	Chip R.	ERJ3GSY0R00V	
R613	RK3034	Chip R.	ERJ3GSYJ471V	
R614	RK3038	Chip R.	ERJ3GSYJ102V	
R615	RK3048	Chip R.	ERJ3GSYJ682V	
R616	RK3038	Chip R.	ERJ3GSYJ102V	
R617	RK3054	Chip R.	ERJ3GSYJ223V	
R618	RK3043	Chip R.	ERJ3GSYJ272V	
R619	RK3026	Chip R.	ERJ3GSYJ101V	
R620	RK3058	Chip R.	ERJ3GSYJ473V	
	TS0116Z	VCO Case	VCO Case DR605	

Ref. No.	Parts No.	Description	Parts Name	Ver.
TCXO Unit				
TP901	UT0019	Connector	FOR PCB CK-1-2	1,2
TP902	UT0019	Connector	FOR PCB CK-1-2	1,2
JP901	MGCLH3AA	Wire	#30G02-035-02	1,2
C901	CU3047	Chip C.	C1608J11H103KT-A	1,2
R901	RK3032	Chip R.	ERJ3GSYJ331V	1,2
D901	XD0304	Diode	UDZ3.0B TT11	1,2
X901	XQ0090	TCXO	NTO-796BL 21.25MHZ	1,2

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
Mechanical Parts				
	AA0050	Screw	2.6+6FeBC	
	AB0008	Screw	S26+8FeNi	
	AV0002	Screw	B26+5FeNi	
	AV0004	Screw	B26+6FeNi	
	AW0001	Screw	W3+8FeNi	
	AZ0026		Insulator Washer 3.2-6-0.3	
	FF0035		SP Net	
	FG0155		SP Cushion	
	FM0076		IC Spring	
	FM0131		Earth Spring DR-M50	
	FP0084		SP Base	
	KS0054Z		Bottom Case	
	KZ0037Z		Front Panel	
	KZ0039		Sub Dial Knob	
	KZ0046		Top Case	
	NB0063Z		Power Button	
	NK0052Z		VOL Knob	
	SS0074Z		Chassis H	
	TS0094	Shield Case	PM shield	
	TS0123	Spring	Earth Spring	
	TS0130		Earth Sheet 605	
	TZ0039		P1 Insulator Sheet	
	TZ0061		Insulator Sheet 21x33	
	TZ0071		Insulator Sheet 21*21	
	UX1200	Wire	Wire DR605TE	1,2
	YX0007		SP Net Tape	
	YX0011		TCXO Tape	1,2
	YZ0001		Silicon Grease G746	
	YZ0041		Cupper Tape	
	YZ0062	Filament Tape	9111x9mm*1	1,2
PCB Unit				
	UP0307		FRONT CPU UNIT	
	UP0308C		MAIN UNIT	
	UP0316		TCXO UNIT	1,2
SP Unit				
	ES0007	Speaker	VS-57-0814-1.5W	
	UX1047	Wire	Wire DR130	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Packing				
	EHM-45Z		Microphone	T,1,2
	EHM-46		Microphone	E
	#G0508		Power Cable	
	#G0509		Screw Set	
	#G0598A		Mic Hanger	
	DS0352A		Spec. Card	E,1,2
	FM0078Z		Bracket	
	HK0405		Item Carton DR605	
	HP0035		Protection Bag (Radio)	
	HU0098		Fixture	
	HU0099		Fixture DR605	
	PK0062		Schematic Diagram	
	PS0239		Instruction Card	
	PT0004A		Lot Number Seal	
	PR0237		FCC PART15 Seal	T
	PH0009		Certification (Export)	T

Note: Version1=TE1, Version2=TE2

ADJUSTMENT

1) Required Test Equipment

1. Digital Multimeter

2. Regulated Power Supply

Supply voltage: 13.8VDC
Current: 15A or more

3. Oscilloscope

Measurable frequency: Audio Frequency

4. Spectrum Analyzer

Measuring range: Up to 2GHz or more

5. Tracking Generator

Output frequency: Up to 2GHz or more

6. Dummy Road

Measurable frequency: Up to 500MHz
Impedance: 50Ω
Power: 50W or more

7. Speaker

Impedance: 8Ω

8. SSG

Output frequency: Up to 1GHz
Output level: -20dB/0.1μV to120dB/1V
Modulation: AM/FM

9. Transceiver Tester

Up to 500MHz

a. Frequency Counter

b. Power Meter

Impedance: 50Ω
Measuring range: 50W or more

c. Audio Voltmeter

Measurable frequency: 50Hz ~ 10kHz
Sensitivity: 1mV ~ 10V

d. Distortion Meter

Measurable frequency: 1kHz
Input level: Up to 40dB
Distortion level: 1% ~ 100%

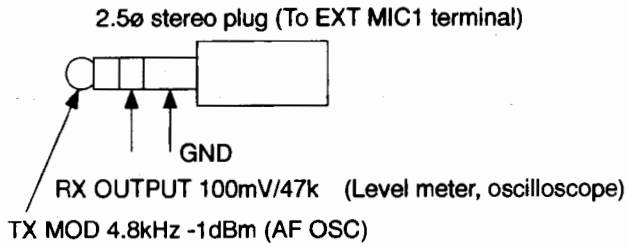
e. Audio Generator

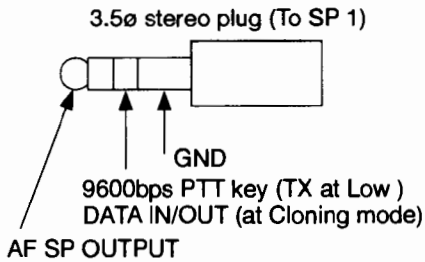
Output frequency: 1kHz ~ 10kHz
Output impedance: 600Ω

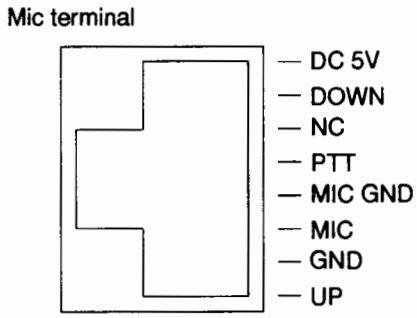
f. Linear Detector

10. 9600bps Hi-Speed Packet Testing

While holding the FUNC key down, press the VHF knob. "9600" is shown on the sub-band frequency display.







Test Equipment

1. All SSG output is indicated by EMF.
2. AG output level connecting with the load is measured.
3. Standard Modulation: 1kHz ±3.5kHz/DEV
4. Audio Output level: 50mW~100mW at 8Ω
5. Test Equipment level filter: HPF (30Hz~50Hz), LPF (10kHz~15kHz)
6. Coaxial cable: 5D2W 1m

Note:

1. Power supply voltage is 13.8V.
   Power switch is off.
2. Turn the volume knobs counterclockwise.
3. SQ volume (press VHF or UHF after pressing FUNC key) S0=squelch is open. S9=tight is closed.
4. Press and hold the "F" key, then turn the power switch on.
   The display lights full.

2) UHF PLL Adjustment

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Reference Frequency	f=435.00 TX	Freq. Counter Power Meter	Back	UHF ANT	VHF Main	TC1	435.0000MHz	± 100Hz
PLL VCO	f=440.00 RX(T, E) f=410.00 RX(TE1) f=460.00 RX(TE2)	Digital Multimeter	UHF Main	TP3	UHF VCO	L606	3.40V (Adjust) 2.50V (Adjust) 3.20V (Adjust)	3.4V±0.2V 2.5V±0.2V 3.2V±0.2V
	f=440.00 TX(T, E) f=410.00 TX(TE1) f=460.00 TX(TE2)						5.50V (Check) 4.50V (Check) 5.30V (Check)	5.0V~6.0V 3.8V~5.2V 4.7V~6.0V

3) UHF RX Adjustment

(*): f=445.00 (T), f=435.00 (E), f=410.00 (TE1), f=460.00 (TE2)

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Herical coil	f=435.00 (445.00)	T.G. -30dBm	Back	UHF ANT	UHF Main	TC201 TC202 L218 L219	Max Gain	430M (E) 440M 438M (T) 450M 400M (TE1) 420M 450M (TE2) 470M
		Spectrum Analyzer	UHF	TP2				
Sensitivity	f=438.00 (T) f=440.00 (T) f=449.99 (T) f=430.00 (E) f=435.00 (E) f=439.99 (E) f=400.00 (TE1) f=410.00 (TE1) f=420.00 (TE1) f=450.00 (TE2) f=460.00 (TE2) f=470.00 (TE2) SSG OUT: -9.0dBμ	SSG Distortion Meter Oscilloscope Level Meter	Back	UHF SP1			Check	SINAD is 12dB or more.
S Meter	f=445.00 (*) SSG OUT: 18.0dBμ	SSG LCD UHF S Meter	Front panel		UHF Main	VR202	Starts lighting "Full."	
	SSG OFF						Check	Does not light.
SQL level	f=445.00 (*) SSG OFF SQL LEVEL: 1	Digital Multimeter	Main	TP5	UHF Main	VR201	2.05V (Adjust)	2.05V±0.1V The squelch is closed.
Distortion	f=445.00 (*) SSG OUT: 60.0dBμ	SSG Distortion Meter Level Meter	Back	SP1			Check	4% or below
RX S/N	f=445.00 (*) SSG OUT: 60.0dBμ	SSG Level Meter Oscilloscope	Back	SP1			Check	40dB or more
9600bps Packet Out	f=445.00 (*) SSG OUT: 20.0dBμ f=4.8kHz 2.5kHz/DEV	SSG Level Meter Oscilloscope	Back	MIC1				100mV ±50mVrms /47kΩ

4) UHF TX Adjustment

(*): f=445.00 (T), f=435.00 (E), f=410.00 (TE1), f=460.00 (TE2)

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
High Power	f=445.00 (T) f=435.00 (E) f=410.00 (TE1) f=460.00 (TE2)	Power Meter Current Meter	Back	UHF ANT	UHF Main	VR203	Max	36W or more
						VR203	35W	±1.0W 11A or below
Low Power	f=445.00 (*)						Check	5±2W
DEV	f=445.00 (*) AG: 1kHz -30dBm	Linear Det. Oscilloscope Power Meter AG				VR204	4.5kHz /DEV	4.5kHz ±0.2kHz /DEV
MIC Gain	f=445.00 (*) AG: 1kHz -46dBm					VR205	Adjust	4.0 kHz ±0.3kHz /DEV
CTCSS Tone Level	f=445.00 (*) AG=0 TONE SW ENC 88.5Hz	Linear Det. Oscilloscope Power Meter					Check	0.5~1.3kHz /DEV
Tone Burst Level	f=445.00 (*) AG=0 PTT+DOWN key						Check	3.0kHz ±0.5kHz /DEV
9600bps Packet IN	f=445.00 (*) AG: 4.8kHz -1dBm FUNC+VHF key	Linear Det. Oscilloscope AG					Check	2.0kHz ±0.5kHz /DEV

5) VHF PLL Adjustment

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Reference Frequency	f=145.00 TX	Freq. Counter Power Meter	Back	VHF ANT			Check	±100Hz
PLL VCO	f=145.00 RX(T, E) f=173.99 RX(TE1, 2)	Digital Multimeter	VHF Main	TP1	VHF VCO	L505	2.80V 7.35V	±0.3V ±0.05V
	f=145.00 RX(T, E) f=173.99 RX(TE1, 2)						Check	2.8V±1.0V 7.35V±0.4V

6) VHF RX Adjustment

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Gain	f=145.00 (T,E) f=165.00 (TE1) f=165.00 (TE2)	SSG Distortion Meter Oscilloscope Level Meter	Back	VHF SP1	VHF Main	L14 L15 L16 L17	Adjust the SSG output level around 0dBμ, and turn L14~L17 to make the wave form max.	SINAD is 12dB or more.
Sensitivity	f=144.00 (T) f=147.99 (T) f=144.00 (E) f=145.99 (E) f=150.00 (TE1,2) f=162.00 (TE1,2) f=173.99 (TE1,2) SSG OUT: -9.0dBμ	SSG Distortion Meter Oscilloscope Level Meter	Back	VHF SP1	VHF Main	L14~ L17	Adjust the SINAD sensitivity and wave form to the best.	SINAD is 12dB or more.
	f=136.00 SSG OUT: 0dBμ						Check	SINAD is 12dB or more.
S Meter	f=145.00 (T,E) f=165.00 (TE1,2) SSG OUT: 18dBμ	SSG LCD VHF S Meter	Front Panel		VHF Main	VR1	Starts lighting "Full."	
	SSG OFF						Check	Does not light.
SQL level	f=145.00 (T,E) f=165.00 (TE1,2) SSG OFF SQL Level 1	Digital Multimeter	VHF Main	TP4	VHF Main	VR2	2.05V (Adjust)	2.05V±0.1V The squelch is closed.

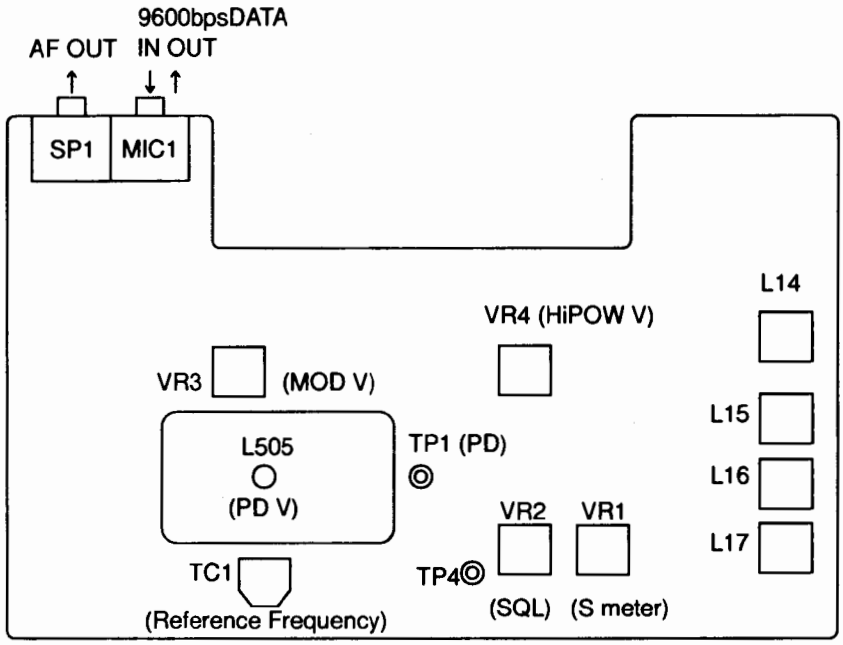
7) VHF TX Adjustment

(frequency) = TE1, TE2

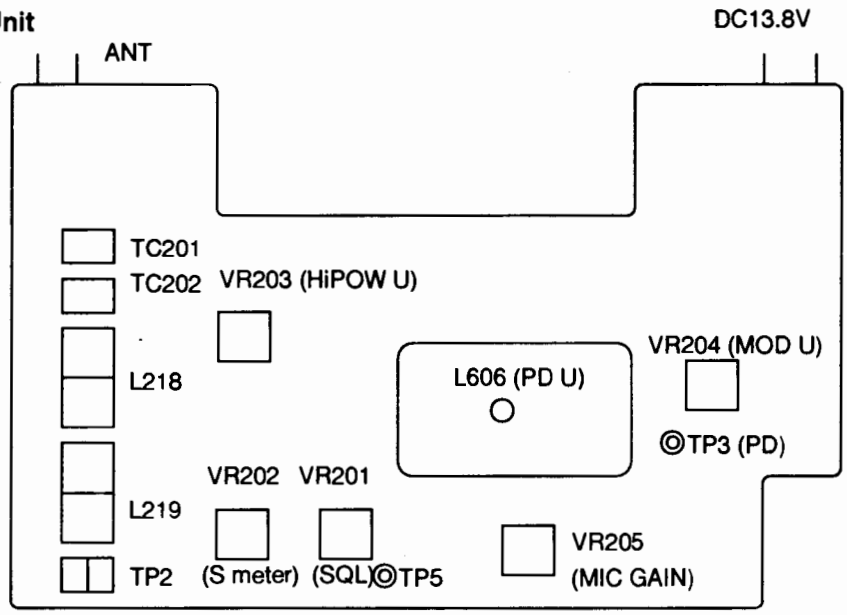
Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
High Power	f=145.00 (165.00)	Power Meter Current Meter	Back	VHF ANT	VHF Main	VR4	Max	55W or more (T,E) 45W or more (TE1,TE2)
						VR4	52W (T,E) 35W (TE1,TE2)	±1.0W 11A or below
	f=144.00 (150.00) f=145.99 (173.99)						Check	48~55W 7A (T,E) 32~40W 11A (TE1,TE2)
	f=173.99 (136.00)							Power is output.
Low Power	f=145.00 (160.00)						Check	3~7W
DEV	f=145.00 (160.00) AG: 1kHz -30dBm	Linear Det. Oscilloscope Power Meter	Back	VHF ANT	VHF Main	VR3	4.5kHz /DEV	4.5kHz ±0.2kHz /DEV
MIC Gain	f=145.00 (160.00) AG: 1kHz -46dBm						Check	4.0 kHz ±0.3kHz /DEV
CTCSS Tone Level	f=145.00 (160.00) AG=0 TONE SW ENC 88.5Hz							0.5~1.3kHz /DEV
Tone Burst Level	f=145.00 (160.00) PTT+DOWN key							3.0kHz ±0.5kHz /DEV
9600bps Packet IN	f=445.00 (*) AG: 4.8kHz -1dBm FUNC+VHF key						Check	2.0kHz ±0.5kHz /DEV
X-BAND Repeater	f=145.00 f=445.00 (T) f=145.00 f=430.00 (E) f=160.00 f=410.00 (TE1) f=160.00 f=460.00 (TE2) XBR ON (VHF+PWR ON)						Check	3.5kHz ±0.5kHz /DEV

8) Adjustment Points

VHF Main Unit

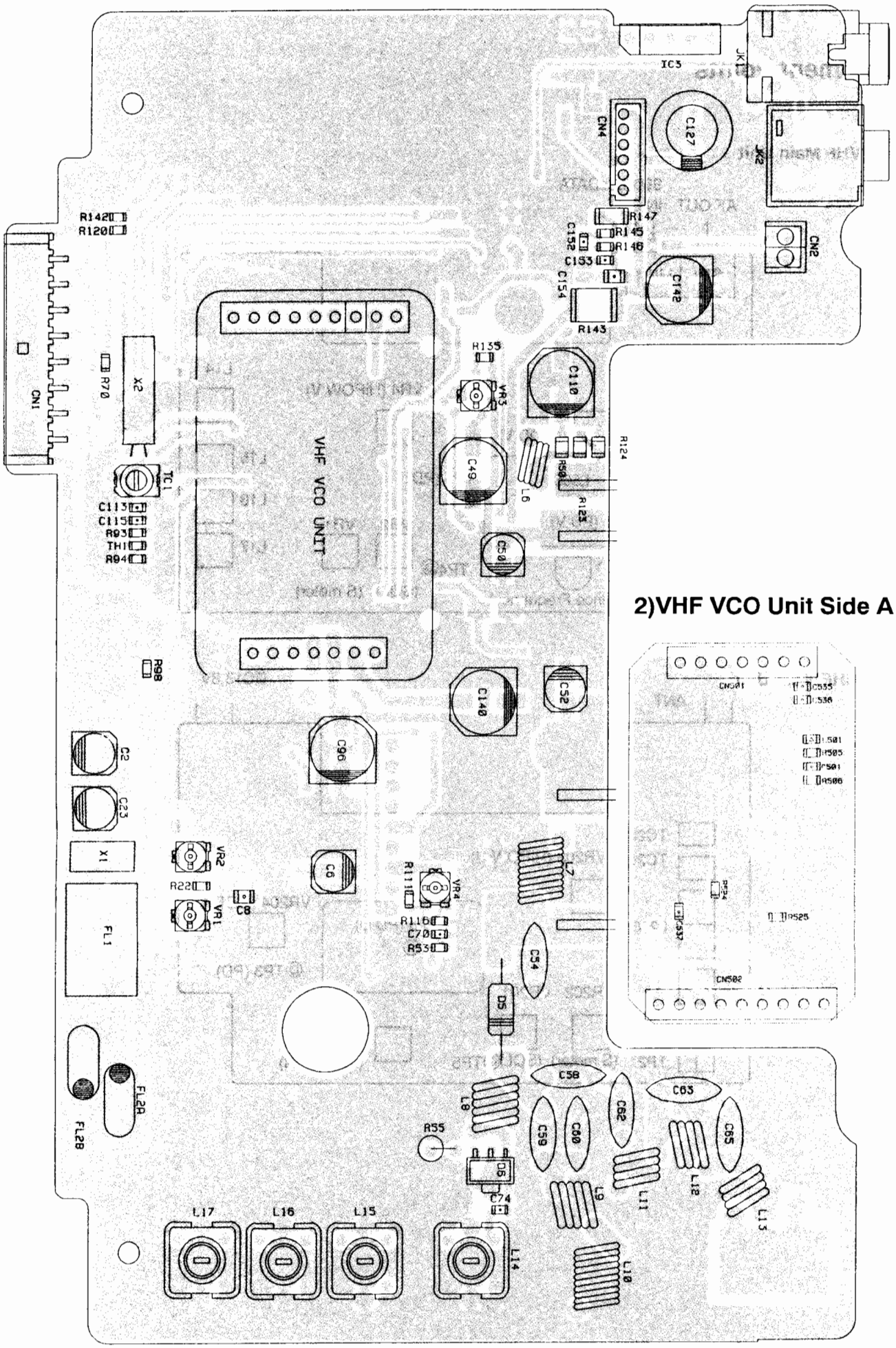


UHF Main Unit



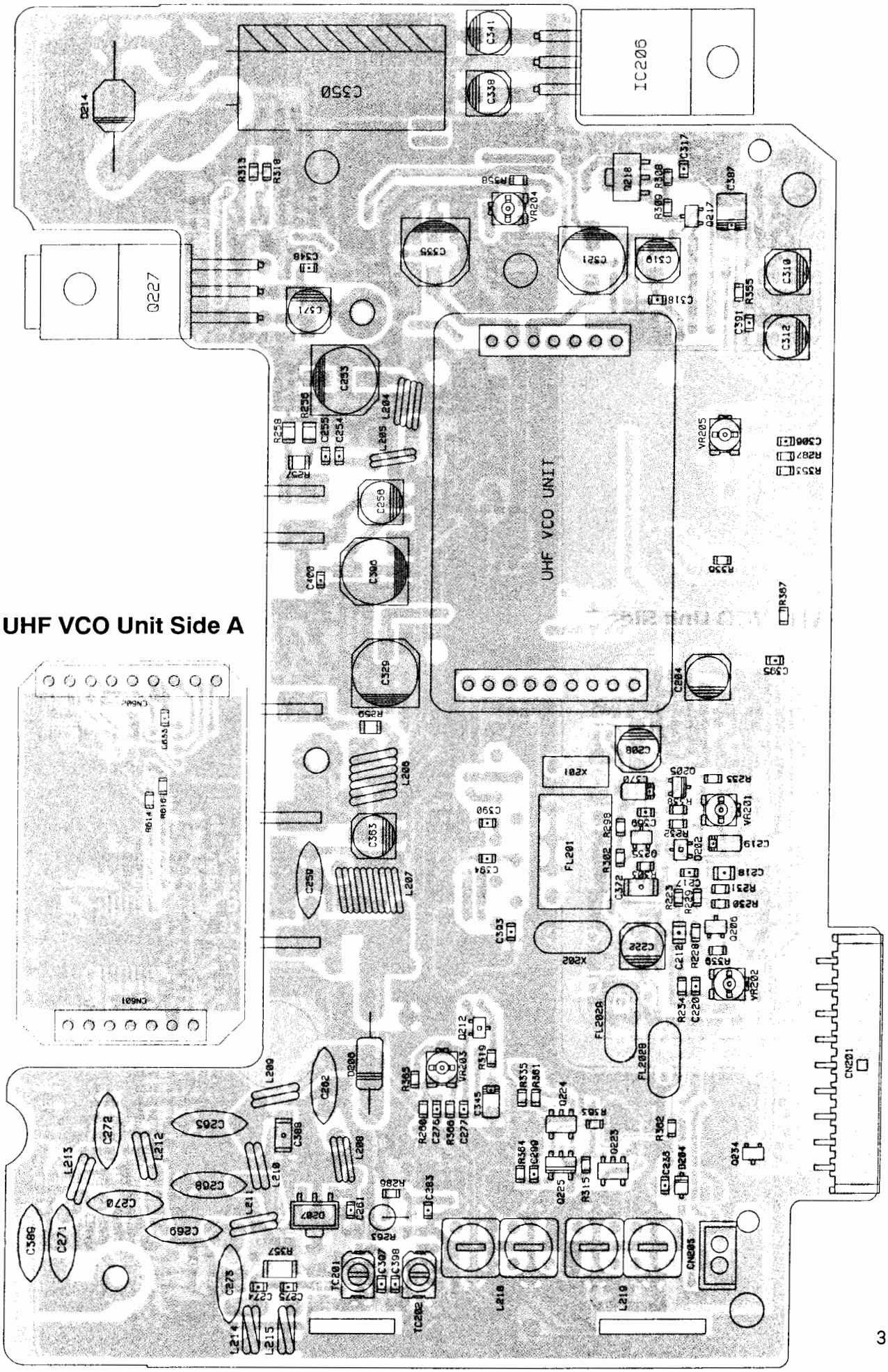
PC BOAD VIEW

1) VHF Main Unit Side A



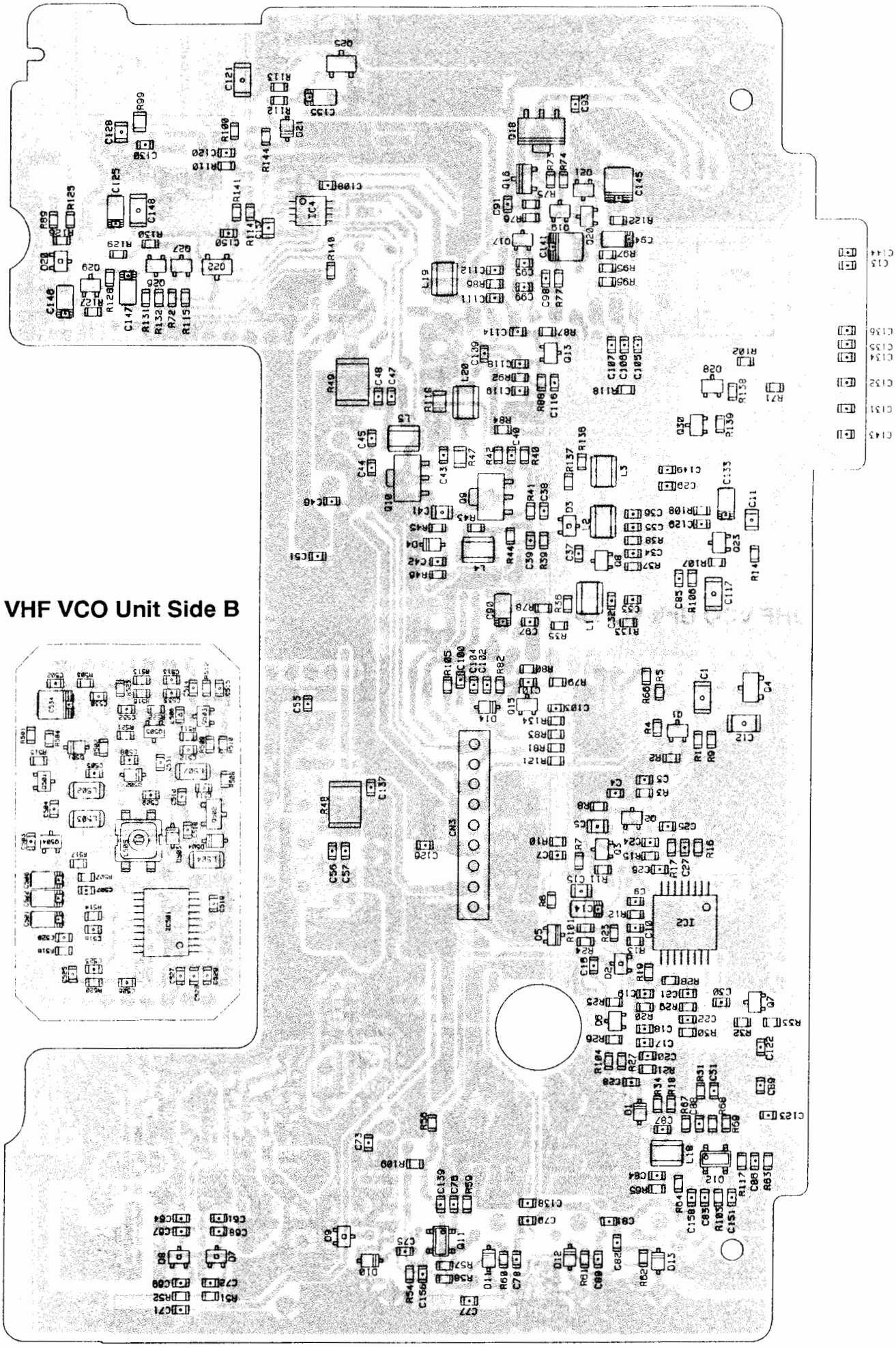
2)VHF VCO Unit Side A

3) UHF Main Unit Side A



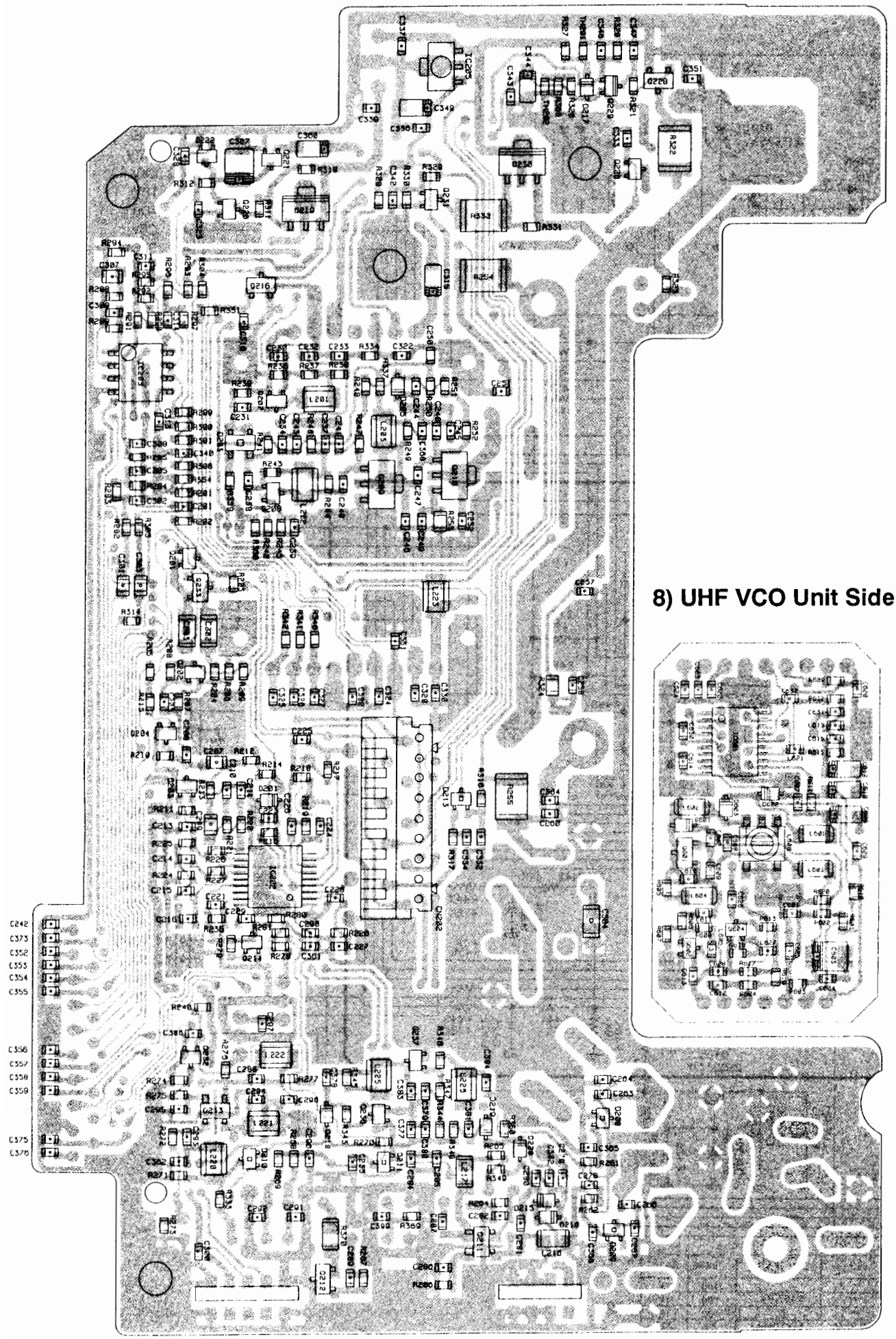
4) UHF VCO Unit Side A

5) VHF Main Unit Side B



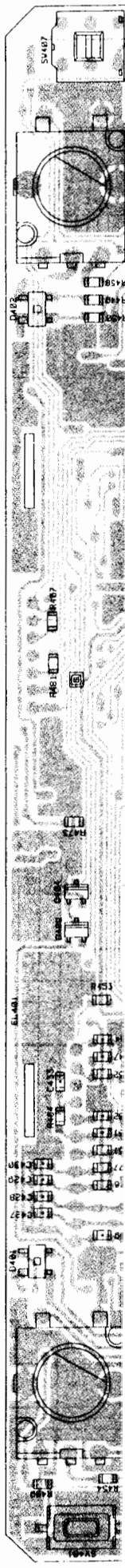
6) VHF VCO Unit Side B

7) UHF Main Unit Side B

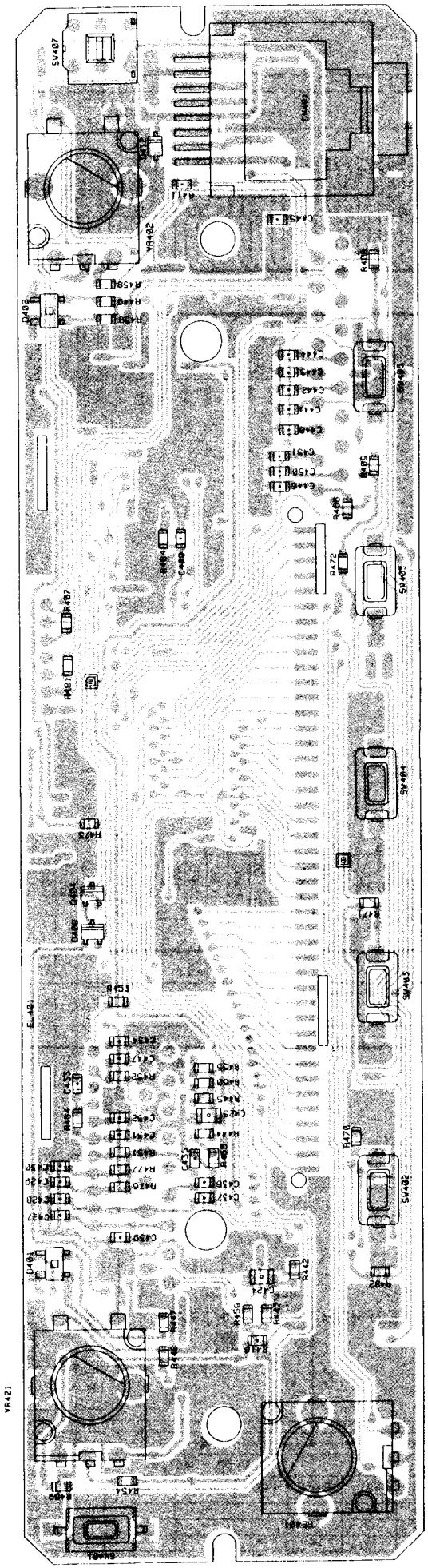


8) UHF VCO Unit Side B

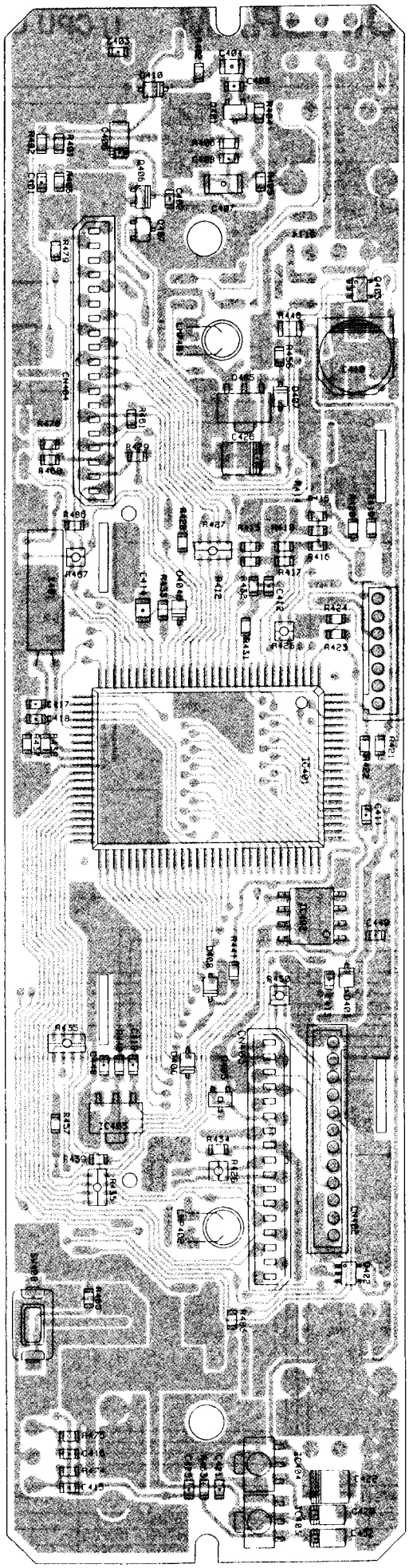
9) Front



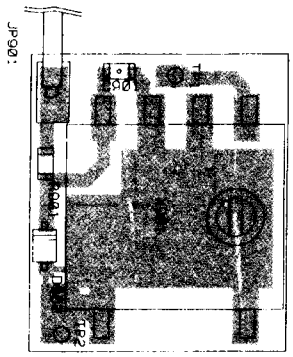
9) Front Unit Side A



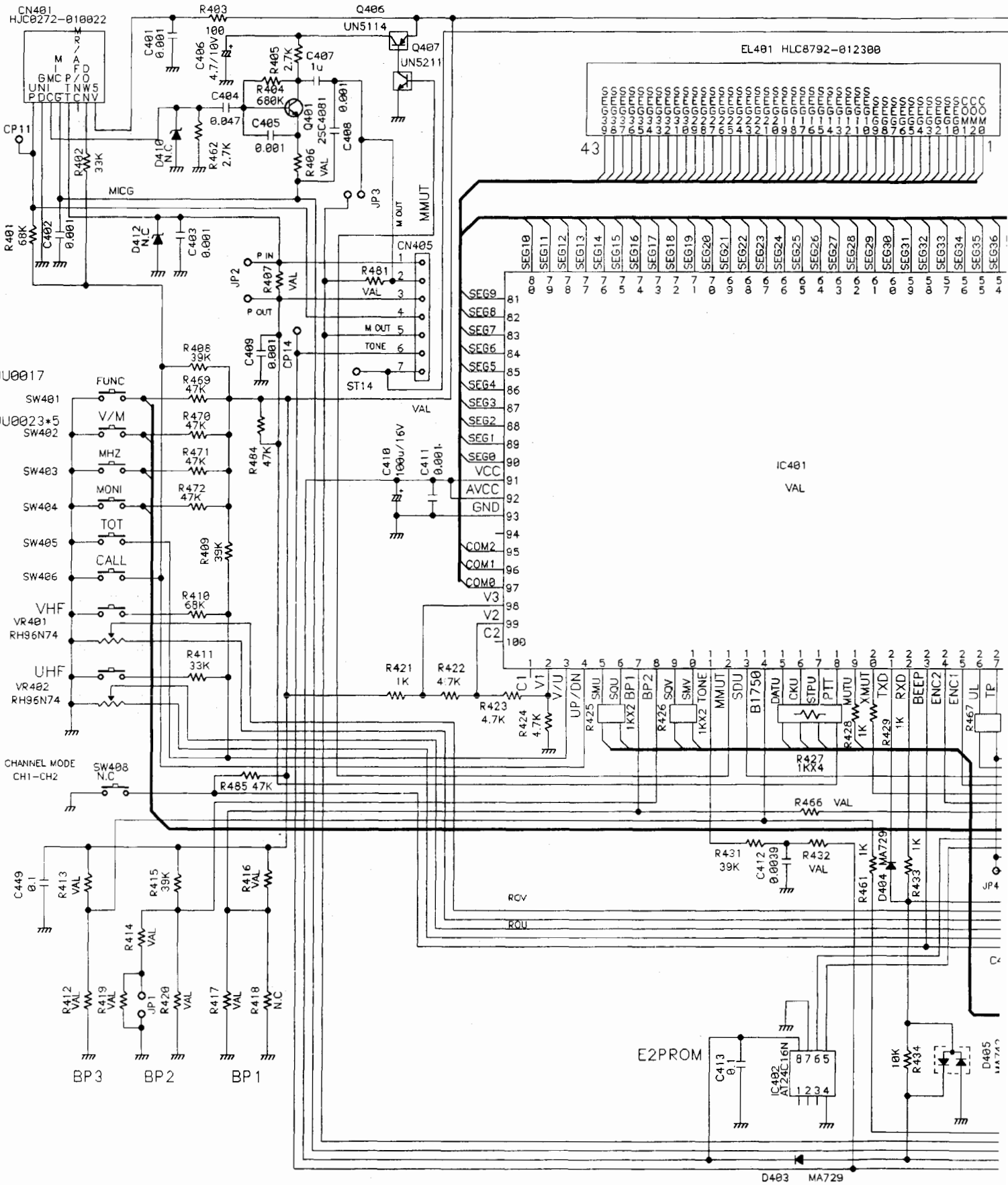
10) Front Unit Side B



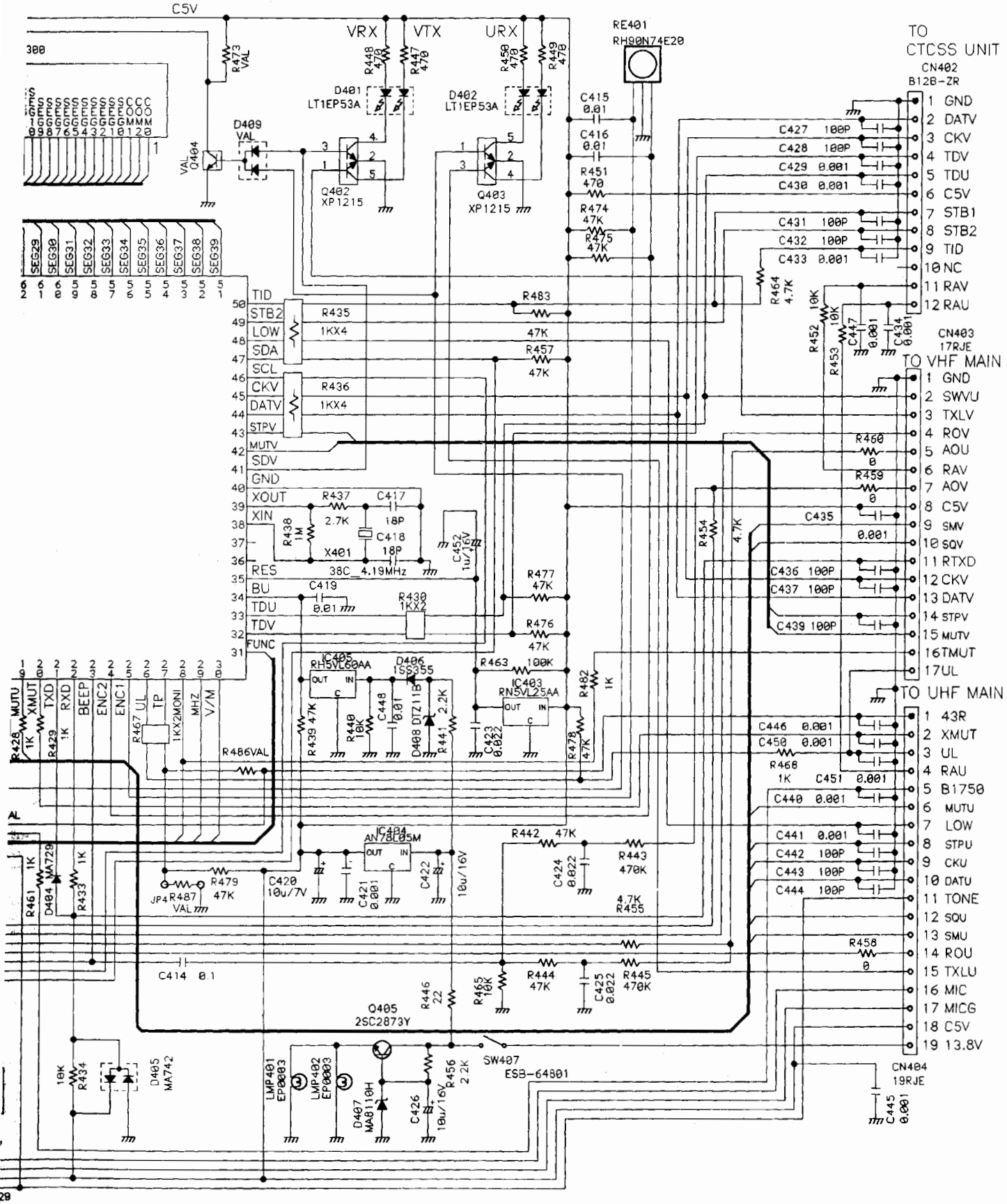
11) TCXO Unit



SCHEMATIC DIAGRAM 1) CPU Unit

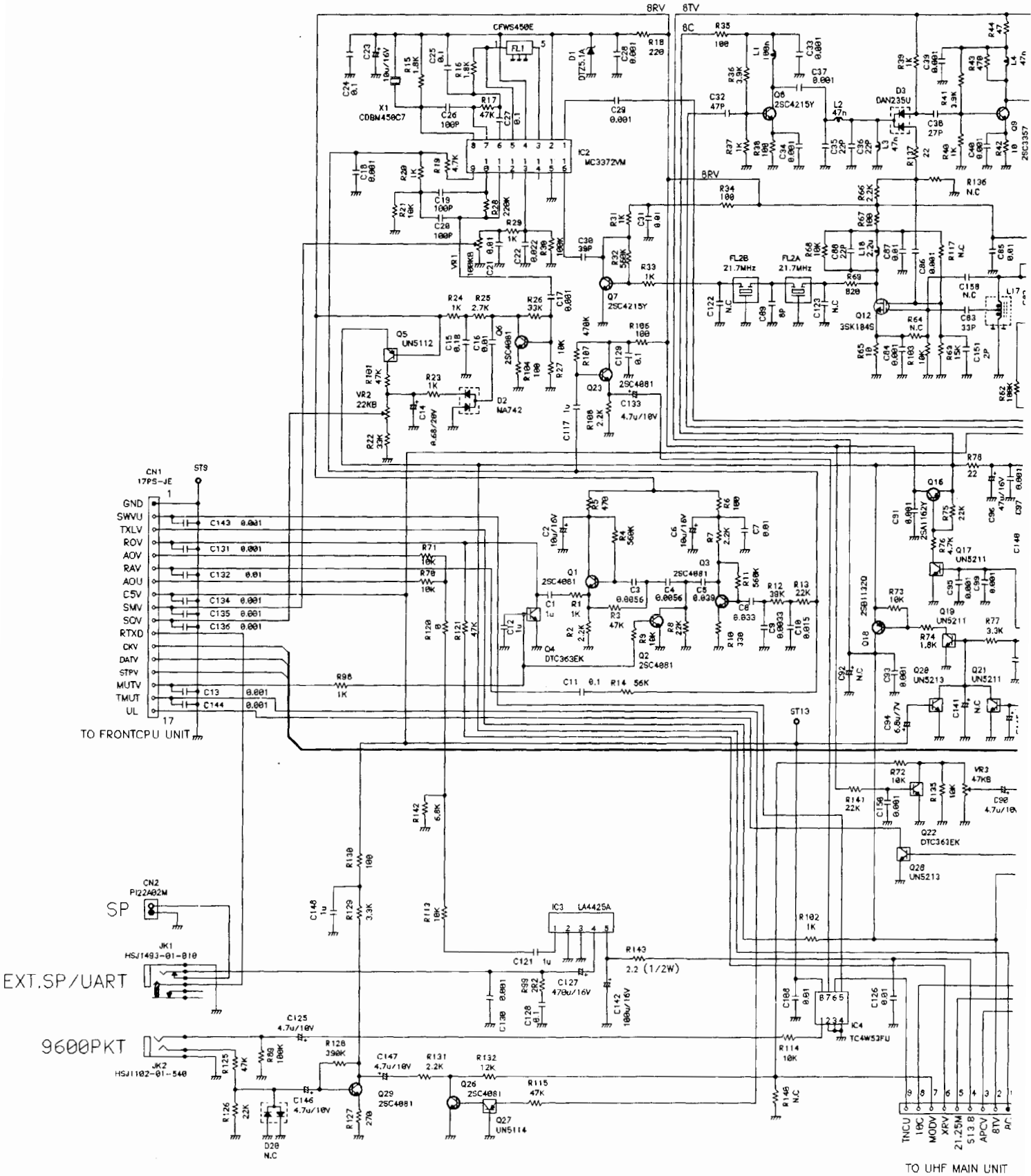


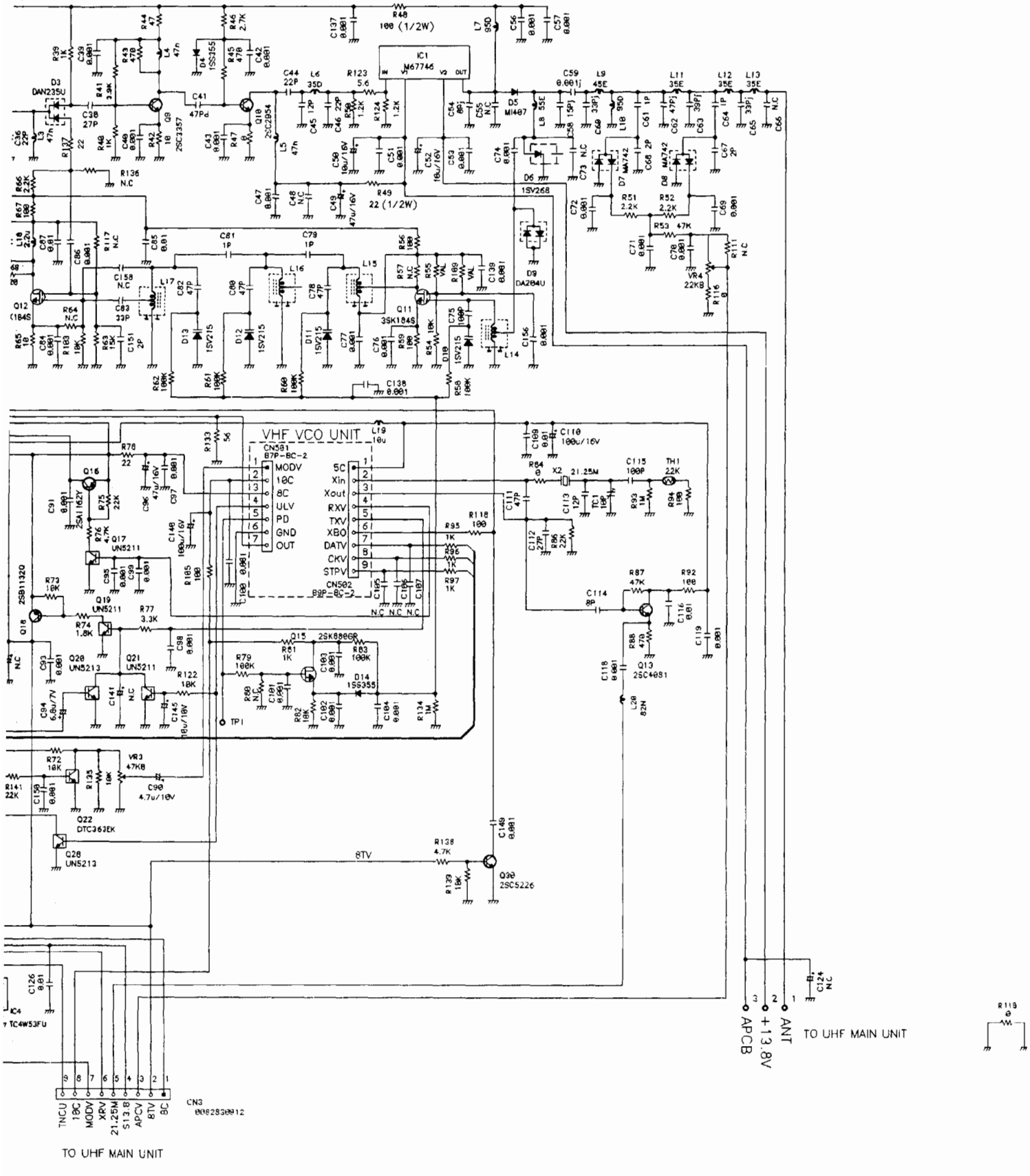
	R412	R413	R416	R417	R419	R420	R466	IC401	CN405	R414	R407	R481	R486	R473	Q404	D409	JP1	JP2
D,H	–	–	–	–	–	0	1K	XA0419 M38267M8L-106FP	–	–	0	0	–	–	–	–	–	–
T	–	47K	39K	–	–	–	–	XA0420 M38267M8L-107FP	–	68K	0	0	–	–	–	–	MACL04AA	–
E	4.7K	47K	39K	68K	0	0	–	XA0420 M38267M8L-107FP	–	68K	0	0	1K	–	–	–	–	–
TE1,TE2	–	47K	39K	–	–	–	–	XA0420 M38267M8L-107FP	B7B-ZR	–	–	–	–	47K	UN5211	DAN202U	–	MPAL05



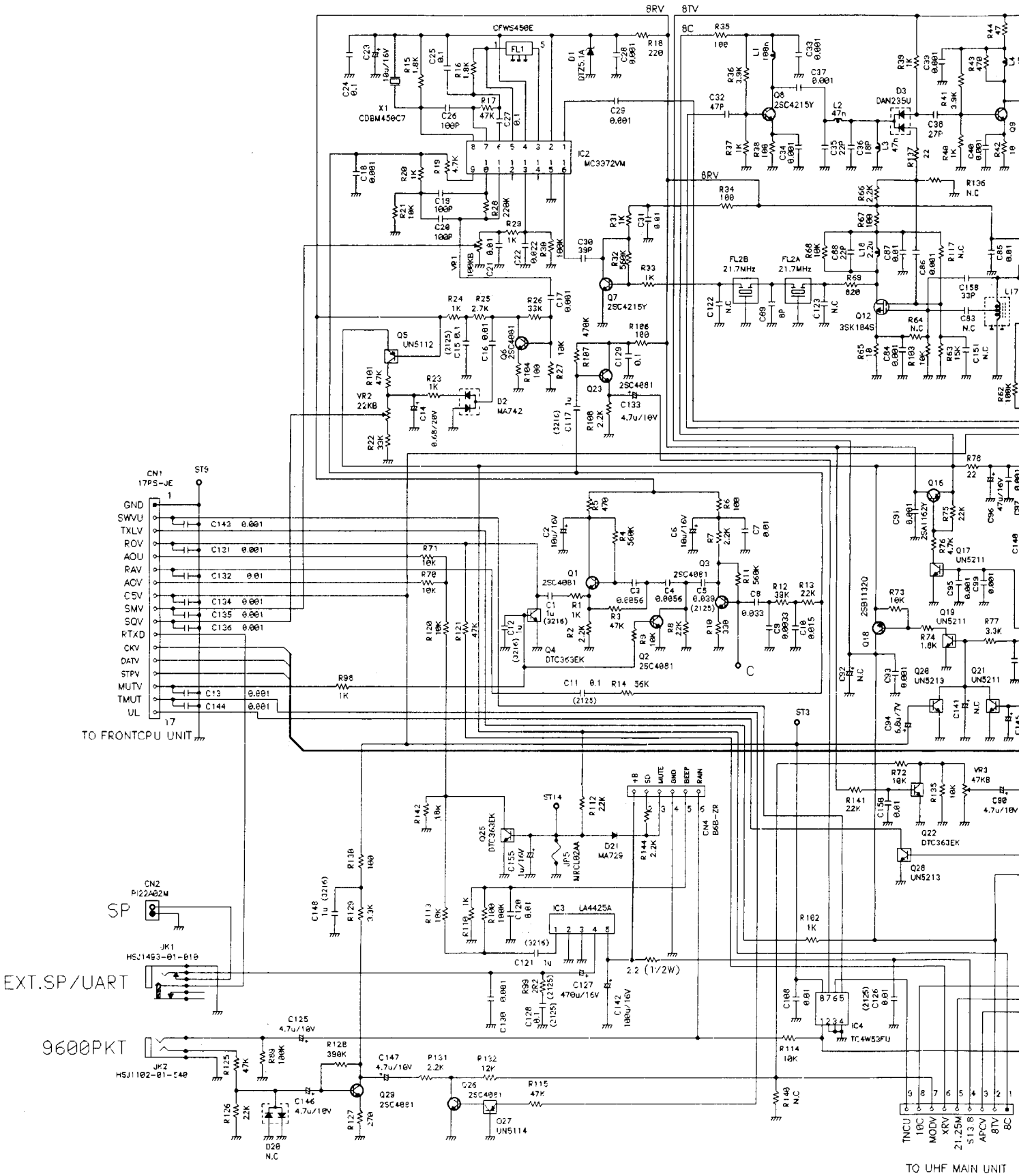
D409	JP1	JP2	JP3	JP4	R406	R432
—	—	—	—	—	100	1K
—	MACL04AA	—	—	R487(0)	100	1K
—	—	—	—	—	100	1K
DAN202U	—	MPAL05AA	MPAL05AA	MRCL04AA	220	22K

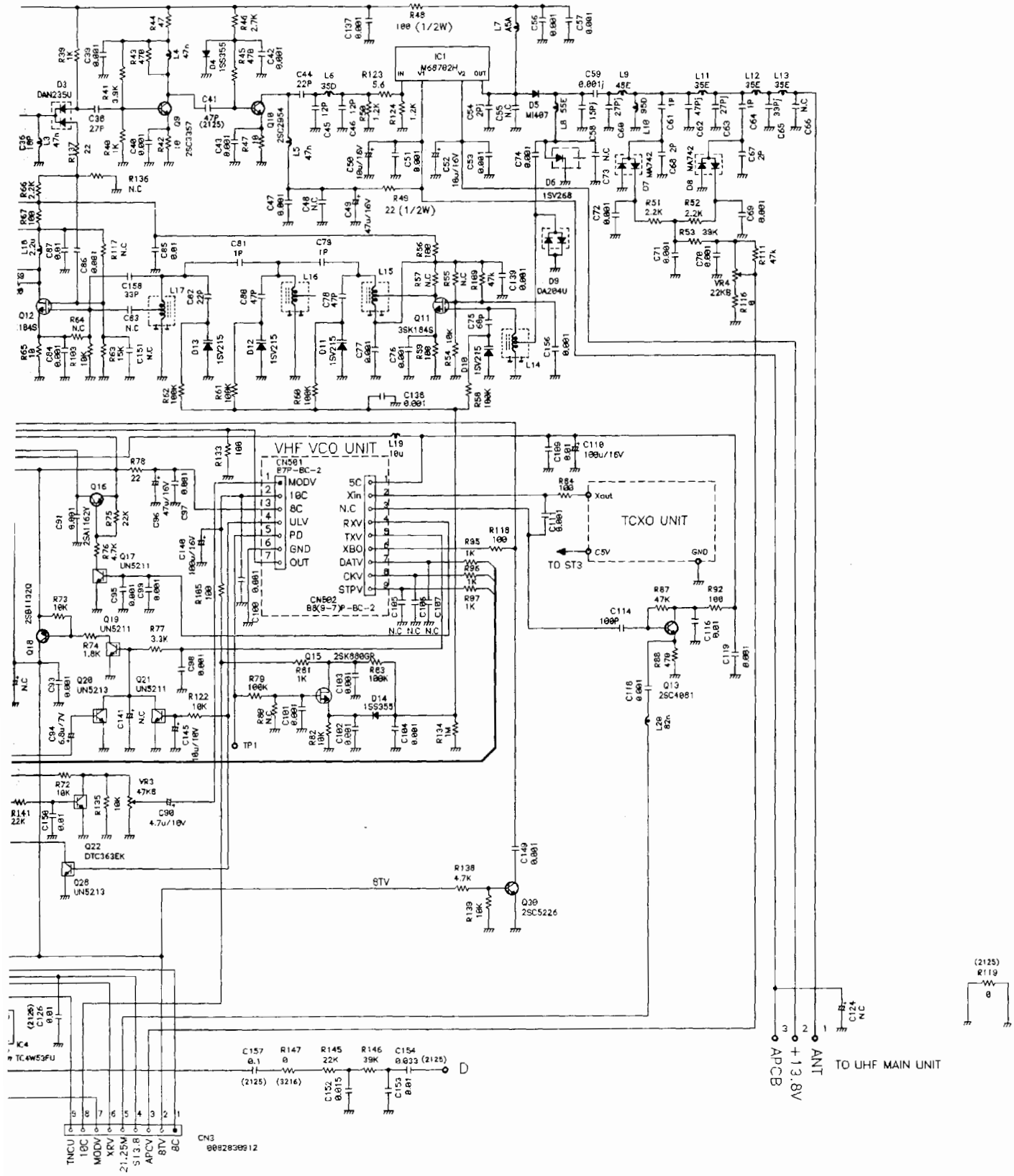
2) VHF Main Unit T/E




VHF VCO UNIT
IC1
M67746
CN501
87P-8C-2
MODV
10C
8C
ULV
PD
GND
OUT
5C
Xin
Xout
RXV
TXV
XBO
DATV
CKV
STPV
CN502
8SP-8C-2
N.C N.C N.C
X2 21.25M
TH1 22K
VR3 47KB
VR4 22KB
Q15 2SK880GR
Q13 2SC4081
Q30 2SC5226
Q22 DTC363EK
Q28 UN5213
Q16 2SA1162Y
Q17 UN5211
Q19 UN5211
Q20 UN5213
Q21 UN5211
Q18 2SB1320
Q12 C184S
Q11 3SK184S
D3 DAN235U
D5 MI487
D6 1SV268
D9 DA204U
D7 MA742
D8 MA742
TP1
IC4 TC4W53FU
8TV
CN3
00828308912
TNCU
10C
MODV
XRV
21.25M
5V3.8
APCV
8TV
8C
APCB
+13.8V
ANT
TO UHF MAIN UNIT
TO UHF MAIN UNIT

3) VHF Main Unit TE1/TE2




VHF VCO UNIT
TCXO UNIT
TO ST3
TO UHF MAIN UNIT
TO UHF MAIN UNIT
APCB
ANT
+13.8V
8TV
IC1
M68702H
Xout
C5V
GND
MODV
8C
ULV
PD
GND
OUT
5C
Xin
N.C
RXV
TXV
XBO
DATV
CKV
STPV
TNCU
8C
MODV
XRV
21.25M
S13.8
APCV
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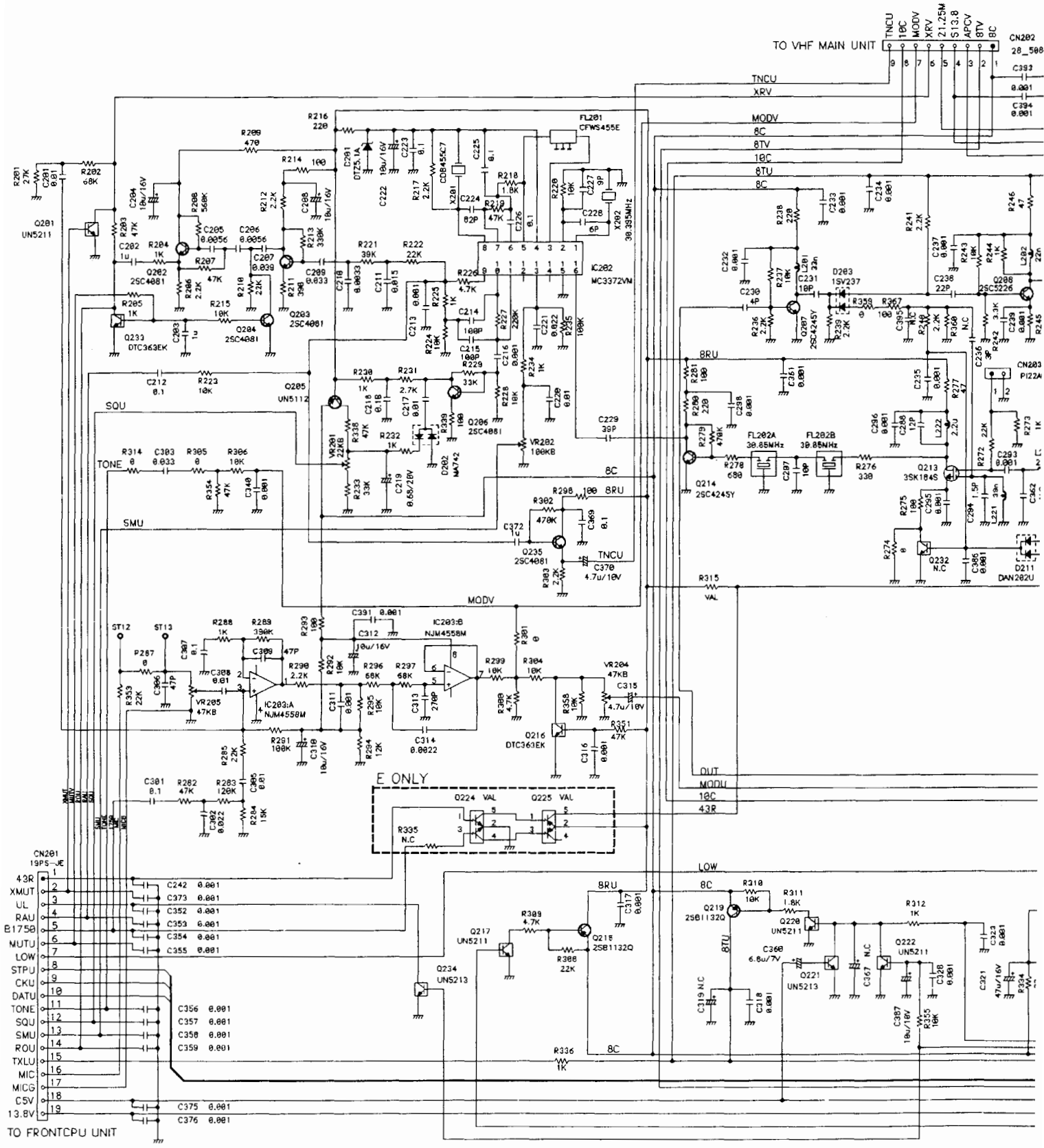
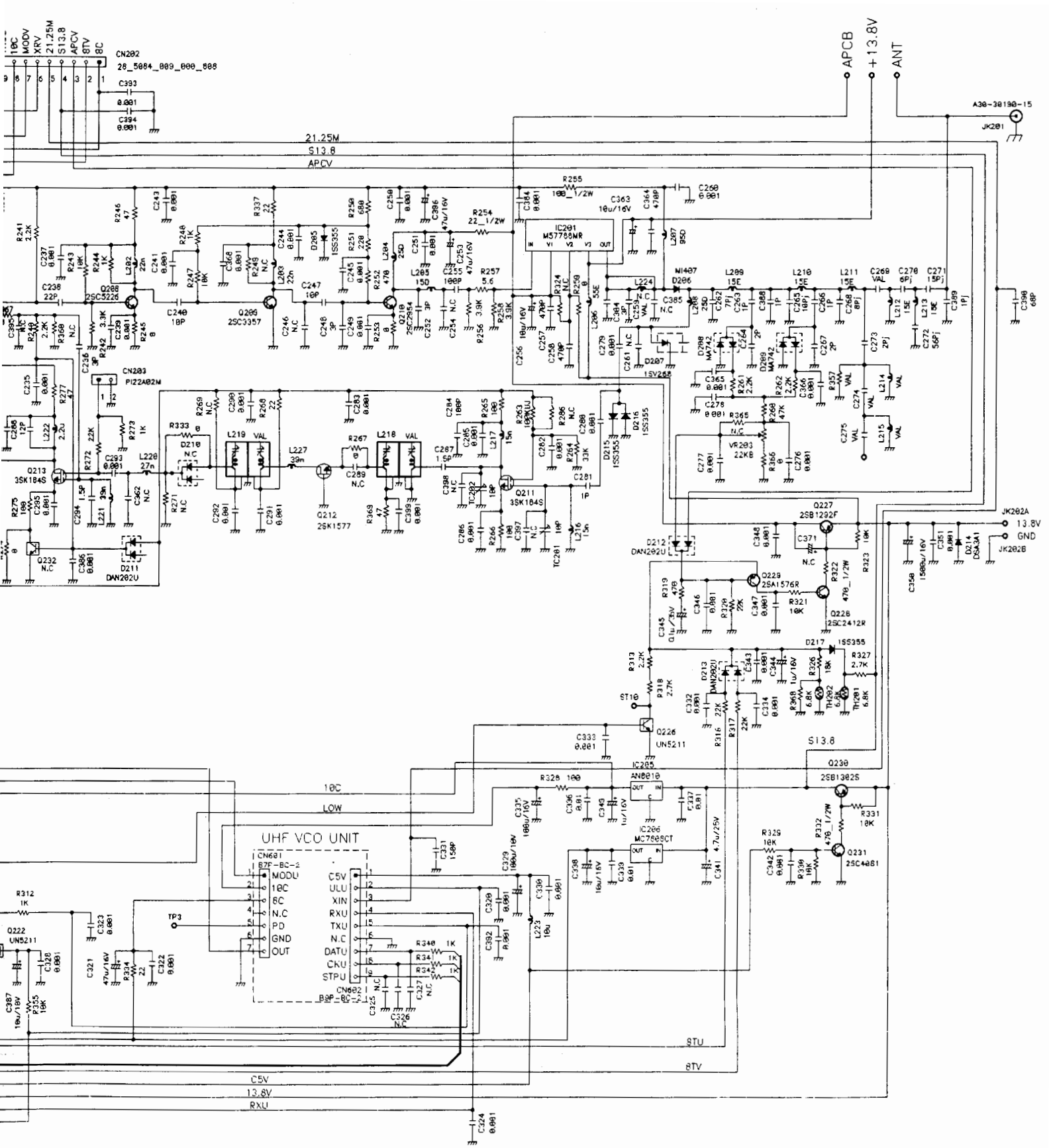
000283G912

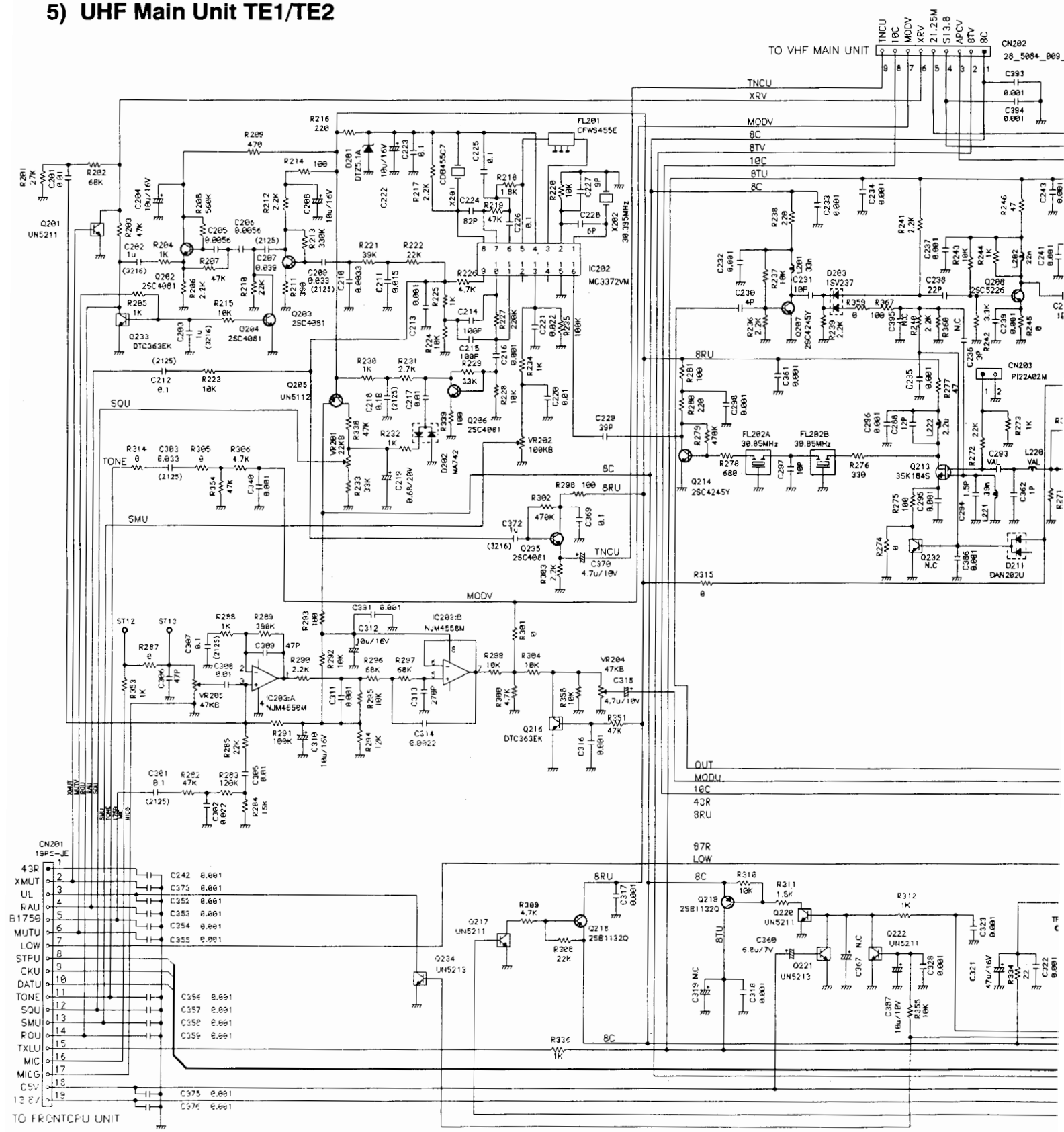
4) UHF Main Unit T/E



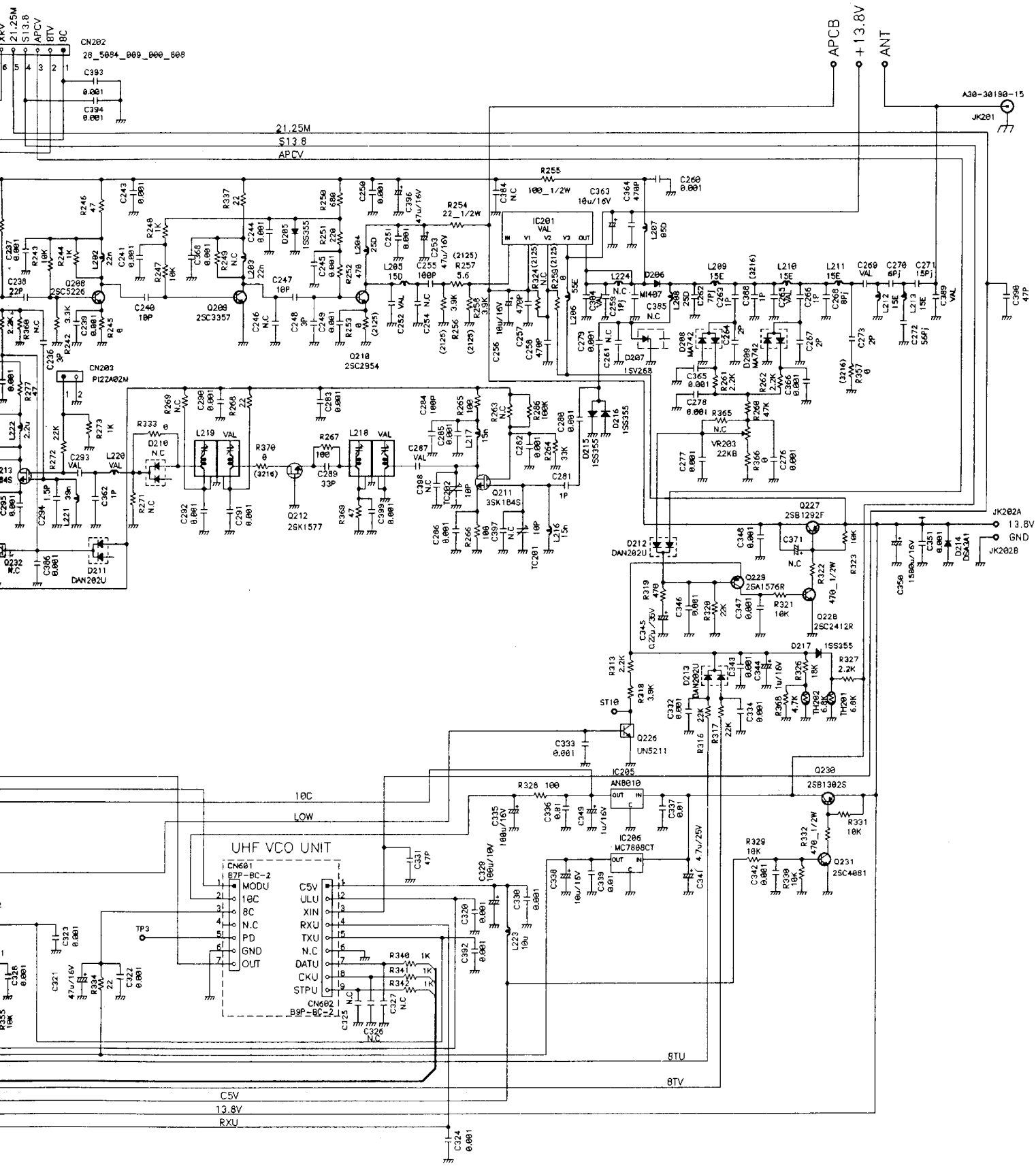
PART	L218	L219	R315	R357	C269	C274	C275	C300	Q224	Q225	D204	L214	L215	C259
T	QA0113	QA0113	0	0	7Pj	–	–	–	–	–	–	–	–	3P
E	QA0114	QA0114	–	–	8Pj	3P	3P	0.001	XN1213	XN111M	RN731V	QKA12E	QKA12E	2P


APCB
+13.8V
ANT
21.25M
S13.8
APCV
10C
MODV
XRV
8TV
8C
CN202
JK201
IC201
M57788MR
Q213
3SK184S
Q211
3SK184S
Q212
2SK1577
Q227
2SB1292F
Q228
2SA1576R
Q226
2SC2412R
Q226
UN5211
Q230
2SB1382S
Q231
2SC4881
IC205
AN8010
IC206
MC7805CT
Q222
UN5211
Q232
N.C
D212
DAN202U
D211
DAN202U
D210
N.C
D207
1SV268
D217
1SS355
CN203
PI22A02M
JK202A
13.8V
GND
JK202B
UHF VCO UNIT
CN601
B7F-BC-2
MODU
10C
8C
N.C
PD
GND
OUT
C5V
ULU
XIN
RXU
TXU
N.C
DATU
CKU
STPU
CN602
B8P-8C-2
TP3
10C
LOW
STU
8TV
C5V
13.8V
RXU

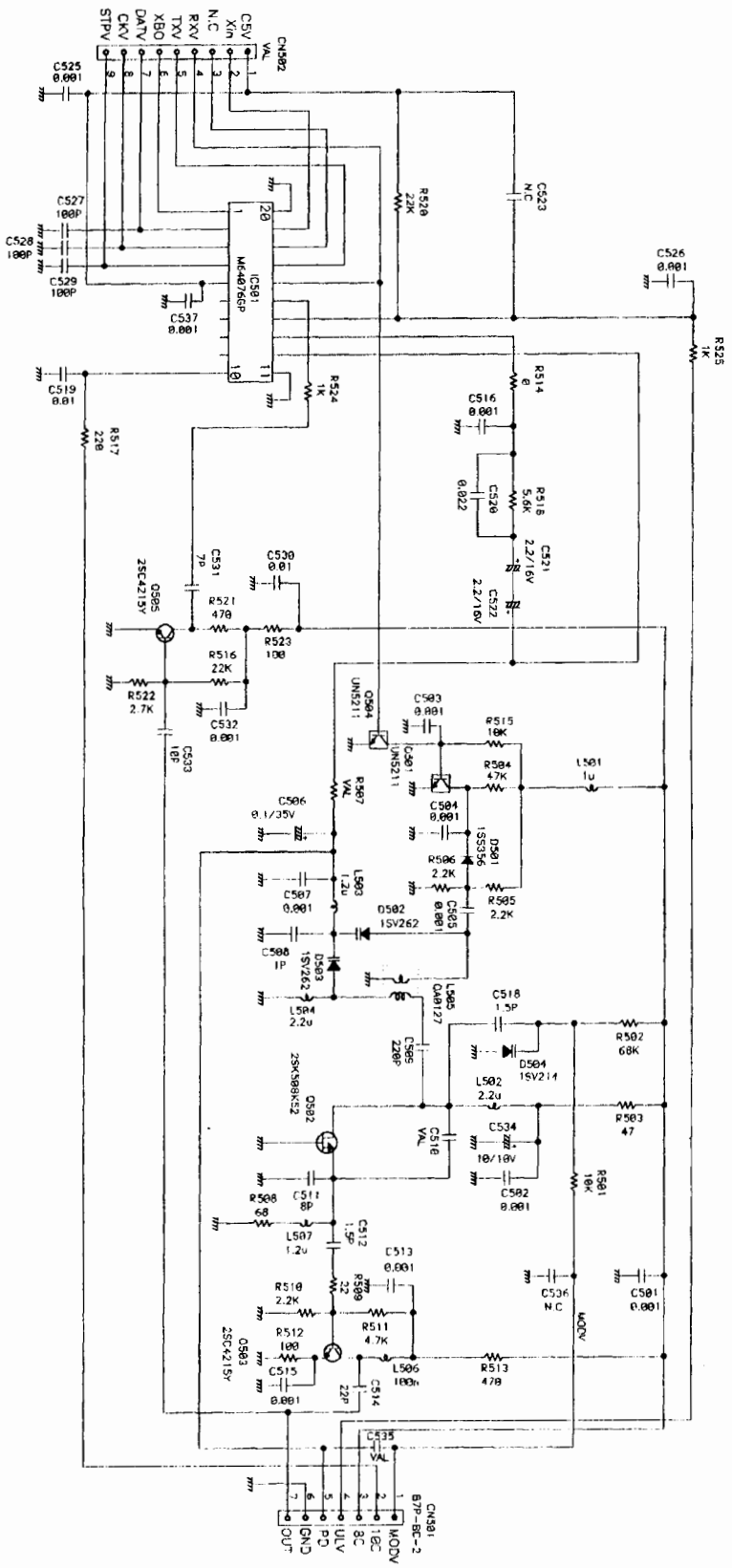
5) UHF Main Unit TE1/TE2



	C269	C267	C293	C304	L220	L218	L219	IC201	C252	C265	C389
TE1	8Pj	2P	33P	3P(3216)	22N	0A0128	0A0128	M57788LR	3P	12Pj	2Pj
TE2	6Pj	1P	10P	N.C	15N	0A0129	0A0129	M57788HR	2P	10Pj	1Pj


APCB
+13.8V
ANT
CN202
28_5084_009_000_808
21.25M
S13.8
APCV
JK201
A30-30190-15
UHF VCO UNIT
CN601
B7P-BC-2
MODU
10C
8C
N.C
PD
GND
OUT
C5V
ULU
XIN
RXU
TXU
N.C
DATU
CKU
STPU
CN602
B9P-BC-2
10C
LOW
8TU
8TV
C5V
13.8V
RXU
JK202A
13.8V
GND
JK202B

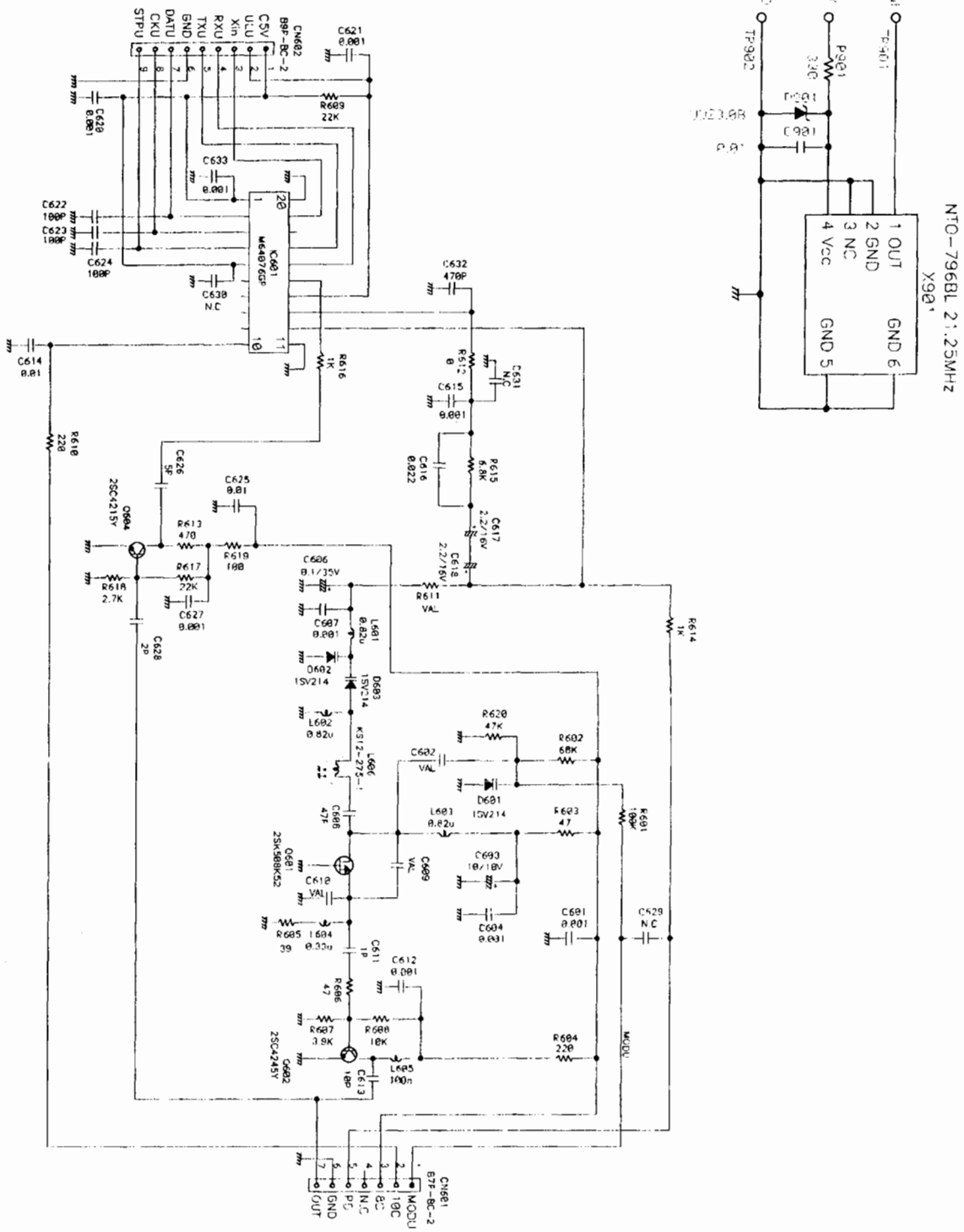
6) VHF PLL-VCO Unit



	C510	CN502	R507	C535
TE1,TE2	8P	B8(9-7)P-BC-2	15K	0.001
T,E	10P	B9P-BC-2	22K	–

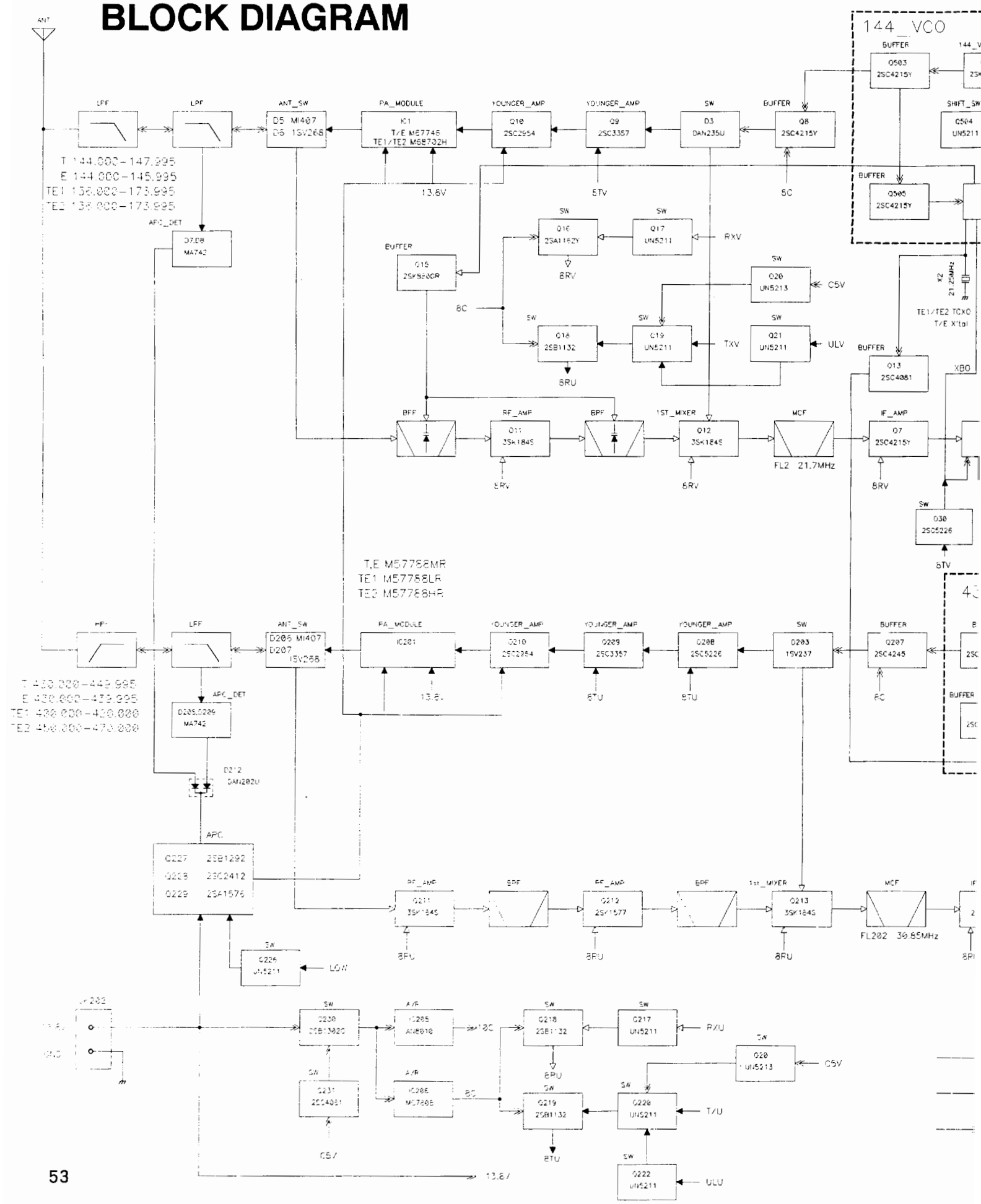
7) UHF PLL- VCO Unit

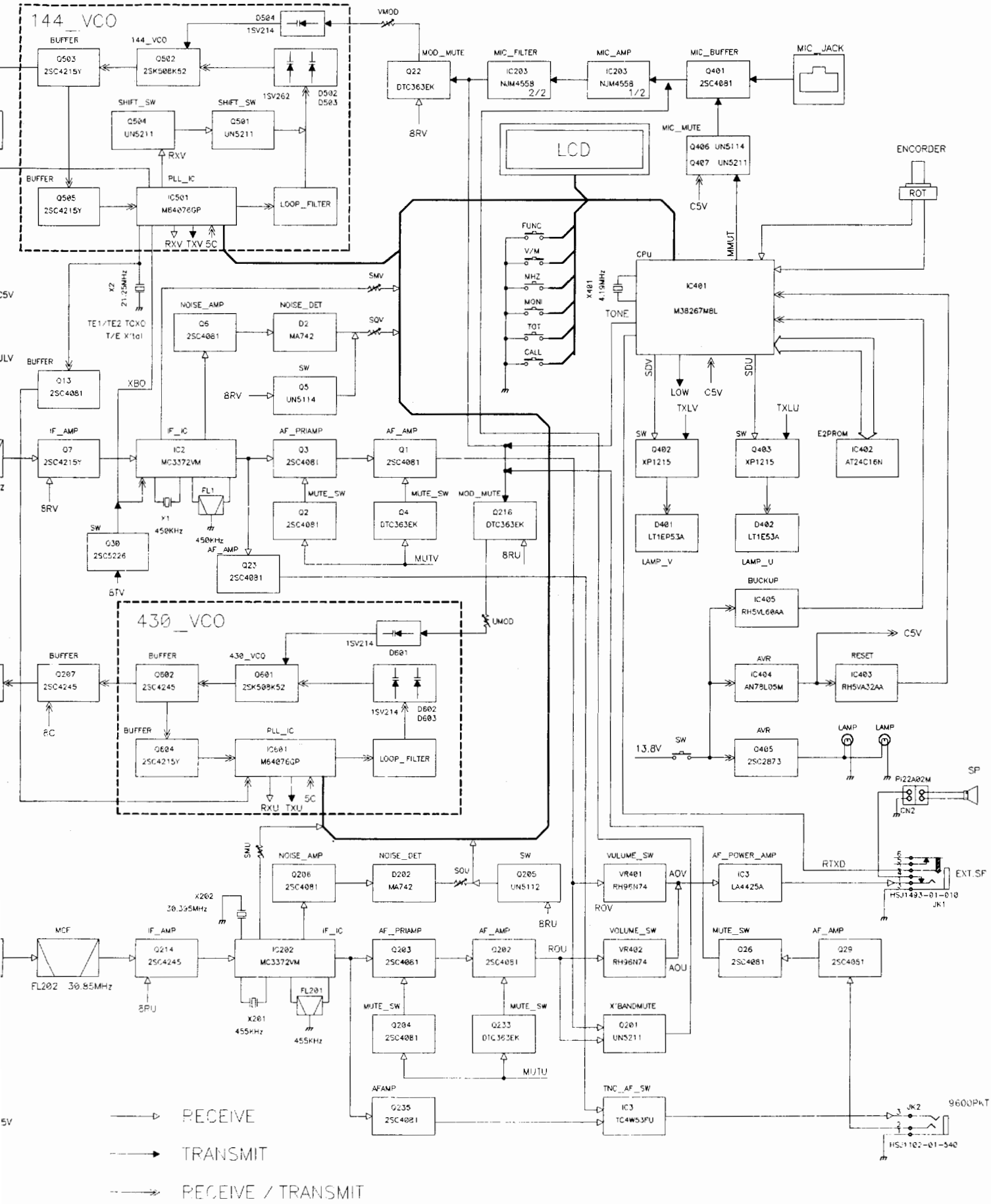
8) TCXO Unit (TE1/TE2 only)



	C602	C609	R611
TE1	2P	8P	18K
TE2	1.5P	5P	18K
T.E	2P	7P	22K

BLOCK DIAGRAM




144_VCO
BUFFER
Q503 2SC4215Y
144_VCO
Q502 2SK508K52
D504 1SV214
VMOD
1SV262
D502 D503
SHIFT_SW
Q504 UN5211
SHIFT_SW
Q501 UN5211
RXV
BUFFER
Q505 2SC4215Y
PLL_IC
IC501 M64076GP
LOOP_FILTER
RXV TXV 5C
MOD_MUTE
Q22 DTC363EK
8RV
MIC_FILTER
IC203 NJM4558 2/2
MIC_AMP
IC203 NJM4558 1/2
MIC_BUFFER
Q401 2SC4081
MIC_JACK
LCD
MIC_MUTE
Q406 UN5114
Q407 UN5211
C5V
ENCORDER
ROT
MMUT
FUNC
V/M
MHZ
MONI
TOT
CALL
CPU
IC401 M38267M8L
X401 4.19MHz
TONE
SDV
SDU
LOW
C5V
TXLV
TXLU
SW
Q402 XP1215
Q403 XP1215
E2PROM
IC402 AT24C16N
D401 LT1EP53A
D402 LT1E53A
LAMP_V
LAMP_U
BUCKUP
IC405 RH5VL60AA
C5V
AVR
IC404 AN78L05M
RESET
IC403 RH5VA32AA
13.8V
SW
AVR
Q405 2SC2873
LAMP
LAMP
SP
PI22A02M
CN2
X2 21.25MHz
TE1/TE2 TCXO T/E X'tal
SMV
NOISE_AMP
Q6 2SC4081
NOISE_DET
D2 MA742
SQV
BUFFER
Q13 2SC4081
XBO
SW
Q5 UN5114
8RV
IF_AMP
Q7 2SC4215Y
IF_IC
IC2 MC3372VM
AF_PRIAMP
Q3 2SC4081
AF_AMP
Q1 2SC4081
MUTE_SW
Q2 2SC4081
MUTE_SW
Q4 DTC363EK
MOD_MUTE
Q216 DTC363EK
8RV
FL1
X1 450KHz
450KHz
AF_AMP
Q23 2SC4081
MUTV
8RU
SW
Q30 2SC5226
8TV
430_VCO
UMOD
1SV214
D601
BUFFER
Q207 2SC4245
BUFFER
Q602 2SC4245
430_VCO
Q601 2SK508K52
1SV214
D602 D603
8C
BUFFER
Q604 2SC4215Y
PLL_IC
IC601 M64076GP
LOOP_FILTER
RXU TXU 5C
SMU
NOISE_AMP
Q206 2SC4081
NOISE_DET
D202 MA742
SQU
SW
Q205 UN5112
8RU
VOLUME_SW
VR401 RH96N74
ROV
AOV
AF_POWER_AMP
IC3 LA4425A
RTXD
EXT.SP
HSJ1493-01-010
JK1
X202 30.395MHz
MCF
FL202 30.85MHz
IF_AMP
Q214 2SC4245
8PU
IF_IC
IC202 MC3372VM
X201 455KHz
FL201 455KHz
AF_PRIAMP
Q203 2SC4081
AF_AMP
Q202 2SC4081
ROU
VOLUME_SW
VR402 RH96N74
AOU
MUTE_SW
Q26 2SC4081
AF_AMP
Q29 2SC4081
MUTE_SW
Q204 2SC4081
MUTE_SW
Q233 DTC363EK
MUTU
X'BANDMUTE
Q201 UN5211
AFAMP
Q235 2SC4081
TNC_AF_SW
IC3 TC4W53FU
JK2
9600PKT
HSJ1102-01-540
RECEIVE
TRANSMIT
RECEIVE / TRANSMIT